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THE PSYCHOLOGY OF PROGRESSIVE DEAFNESS

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Sir Joshua Reynolds, the painter, was hard of hearing. He made several portraits of himself with his ear trumpet. Of his deafness, Goldsmith wrote in his poem "Retaliation"

To combs averse, yet most skillfully steering
When they judged without skill, he was still hard
of hearing,
When they talked of their Raphaels, Corregios
and stuff,
He shifted his trumpet, and only took snuff

Here was a man who used his deafness as an escape. Fortunately, his life was so filled with purpose and accomplishment that he resorted to this escape more as a convenience than as a necessity. George Meredith accepted his infirmity in a more chastened fashion, for in 1908 he wrote to Mrs Saleeby 'And worse—the Sexton has filled one of my ears, and seems to be at work on the other, so that conversation is not smooth or pleasant for me, and can hardly be agreeable for my friends. Therefore I do not encourage them to come here though I love them.' Lord Chesterfield wrote fairly optimistically at first "I am very deaf, and consequently alone, but I am less dejected than most people in my situation would be." But after three years of buffeting, he said "My deafness is extremely increased and duly increasing and cuts me wholly off from the society of others, and my other complaints deny me the society of myself." Here are three illustrative quotations (furnished by Mrs Harriet Montague of the Volta Bureau in Washington) giving concrete evidence of the tragedy that stalks in the wake of every progressive form of deafness. Are otologists content with applying the limited curative means at their disposal, and then do they turn patients away to be the victims of despondency on the one hand or of charlatans on the other? The otologist is the first person to whom the hard of hearing trustfully turn. This discussion will deal with the behaviors and reactions of these unfortunate persons who daily seek the counsel of the otologist. I cannot speak with the authority of the psychologist. One must turn to Karl Menninger or Paterson or Rudolph Pintner for that. Rather do I speak from the point of view of one who is himself hard of hearing, and whose interest both as a victim and as an otologist has been naturally brought him into intimate contact with that splendid band of workers, who through the

American Federation of Organizations for the Hard of Hearing are pushing forward on a nationwide front to help themselves and their handicapped fellows. Those who would read a triumphant story of human accomplishment against odds are urged to review the gripping story as told by the secretary of the organization Miss Betty C Wright, before the American Otological Society on June 19, 1931¹

CHANGES IN BEHAVIOR AS DEAFNESS PROGRESSES

Scientifically, the otologist is concerned with whether his patient has a nerve deafness, or a catarrhal form, or whether there is an otosclerotic heredity. In this discussion I must skip over the cause and nature of the disease and deal only with the behavior changes as deafness progresses through different ages.

As a Child—The onset is gradual. There is no concern. Neither child nor parent nor doctor appreciates the grave prognosis. The second stage finds a beginning handicap. The father thinks Tom is inattentive, the mother calls it preoccupation, the teacher suspects stupidity, his comrades think he does not care or that he is queer or self-centered. If the parents are busy and nonanalytic, the deafness may progress even to a 30 per cent loss with no one understanding what is the matter. The boy with no standard of comparison will not appreciate his own deafness at first, but will blame lowered voices or adventitious noises for his failure to hear. Finally, the realization forces itself on him that something is wrong. He will tend to evade this conclusion, he will try to cover up and deceive others. This deceit phase may be carried to extremes and keeps cropping out in his later life. He becomes very adept and may fool parent and teacher and playmate long after his trouble should have been found and corrective measures and mental adjustments instituted. But though he has covered up his malady he has paid the price. Other explanations for his failure to hear had to be offered. The child whose remarkable alertness catches the meaning when but half of the sentence is heard suffers the ignominy of a suspected mental deficiency. In school, the easiest way to answer a question that he does not hear is 'I don't know,' and a zero mark for that day's lesson is the inevitable consequence.

In Adolescence—By this time Tom has passed into the next stage where his deafness is known by all. He now carries out the same cover-up policy by trying to minimize the severity of his handicap. No normal person wishes to attract attention to any infirmity. This is axiomatic. So he may try to show how well he can hear by sitting far back instead of in front. Rather than say "what," he will guess what was said, often

¹Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

¹Wright, Betty C. Social Aspects of the Work of the American Federation of Organizations for the Hard of Hearing, Incorporated. Auditory Outlook, September 1931. Tr. Am. Otol. Soc. 1931, p. 173.

erroneously, having missed the key word or idea, and thus be unfairly credited with stupidity.

At this point, the characteristic inferiority complex of the hard of hearing creeps in. He finds himself not as able and efficient as his fellows. He is inferior and tries to hide it, he becomes the more aware of it as he broods and dwells on it. Aggressiveness may enter here. The boy is not so clever in his studies, or not so acceptable on the baseball field, in football or in shooting marbles. He never receives the commendation of his fellows, he decides that something must be done about it. He may tell a startling lie. Yes, he is found out and even gets punished, but the important thing is that he gains a compensating satisfaction in calling attention to himself. Or he may steal or swear or fight. Thus he secures the center of the stage. This is healing balm for the boy who has been on the sidelines. The chronic bad boy, the thief, the firebug or the bully may be here in the making. One patient of mine, nearly totally deaf and with almost no education, had found his satisfaction in boxing, and at about 18 years of age was earning his own way as a professional pugilist. In the child, then, one finds a baffled personality, discouraged, uncertain, perplexed, timid and afraid, or aggressive, self-centered and blundering. In the adolescent, defeatism and isolation contribute their tragedy, or rebellion is added. In his school work, successive failures take him back till his classmates are younger and smaller than he. Of course a 15 year old boy is a misfit in 10 year old surroundings, and a misfit he may continue for the rest of his life unless the otologist, who should be his best friend, so advises that educational adjustments ready and available can be applied.

The Young Adult — But supposing the hearing impairment is not considerable until the early twenties. This is the more frequent period for adult progressive deafness to become established. Fortunately, education has been acquired. A trade or profession has been learned, perhaps one in which good hearing is well-nigh essential for the girl may be a stenographer or a telephone operator, the boy may be a sales clerk, an insurance agent or a teacher. What are their mental reactions as deafness stalks near? Here resistance and rebellion are more apparent. The person is likely to hide it as a dread secret which must not be known. Long after friends have noticed it, ostrich-like she thinks she has hidden most of her infirmity from public knowledge. Finally, her parents or friends force her to the otologist's office, where she may give no history of any ear trouble or say that some wax is bothering which she desires removed because it dulls her hearing just a little. Examination may show the characteristic lack of cerumen and a bilateral 40 per cent loss of hearing, with but little help available. If a cure could be assured in three treatments, she would try it. But if the tonsils should be removed or a nasal condition should be corrected, she says why bother, she is not sick enough for that. If the otologist senses that she is not facing and should face the issue, and proceeds to tell her the facts without mincing, she will insist "I am not deaf, I can't be deaf", or she tentatively accepts the verdict and there is a scene which continues on at home for many days. Finally she works out of her despair, but not into the otologist's office. She says that the doctor simply tried to scare her and did not know what he was talking about. She returns to her old life and continues her many petty deceptions. A stenogra-

pher blames her employer's mumbling voice. A telephone operator insists that she hears the numbers, but an increasing list of errors are checked against her. The normal school student who came to the office the other day complained because her teachers lowered their voices purposely when they addressed her, and the mother shared in this persecution idea. There is throughout this period a tendency not to face fact and to seek adjustments but to go on as before, hoping that "manna will fall from heaven" and things will work out all right. Bitterness comes, but youth is resilient. Inferiority may come, but if it has not entered until now, it is likely to wait until the handicap is more advanced. When marriage is contemplated, in my limited experience there is a greater likelihood of facing facts and trying to anticipate future probabilities. As between the male and the female, up to this point of, say, 25 years of age, the reactions to encroaching deafness are nearly parallel, but by now the female takes it harder than the male, and this becomes increasingly so as middle life is approached.

Friends do so little to help. In their popular book "Your Hearing,"² Dr Wendell C Phillips and Dr Hugh Grant Rowell find it natural to dislike the hypacusis or deafened "What a nuisance they are, we think. So we ostracize them cruelly. They can't help becoming introverts. From introversion to paranoia is no long step. The shut-in individual may easily develop a twisted philosophy of life, based on persecution. The asocial traits appear."

In the Prime of Life — If the hearing handicap has troubled but little until the forties, it now handicaps the woman more. If she is in some administrative task, she then runs parallel to the man. But if she is in the home or active in society or in club work or in church and charity activities, this deafness troubles her much more than it does the man. His business world has learned to accept him at his worth and will adjust itself somewhat to his handicap, her world is wider and more superficial in its contacts and will not help her. She has the choice of making the adjustments, or of isolating herself. In the social amenities she is under a constant handicap. Intimate confidences with a friend are nearly impossible, unless written. In the interplay of general conversation, she has the choice of monopolizing it, for only then does she know all that is being discussed, or she can keep silent. Probably she will absent herself from one activity and then another, and her former broad interests and vital contacts will contract and narrow until her limited and self-centered world finds her supersensitive, easily upset, perhaps emotional, and suspicious. Forced back into the home, she is impatient, selfish, unhappy and even morose.

Occasionally the man takes it very hard. The two things he dreads are failure to carry on in his active man's society, and the inability to continue as the provider. Often a severe tinnitus is superimposed which constantly reminds him of his deafness, he may brood on his troubles, and insanity or even suicide result. Dr MacLaurin of Australia, in "Mere Mortals,"³ says that Martin Luther was tormented by infernal crashings and whistlings in his ears that certainly did not come from heaven and, therefore, he was certain, must be from Satan himself. Luther used to wake out of a sound sleep and yell back at his devil and once he

² Phillips W. C. and Rowell H. G. *Your Hearing How to Preserve and Aid It*. New York: D. Appleton & Company, 1932.
³ MacLaurin Charles. *Mere Mortals*. Medico-Historical Essays. New York: George H. Doran Company, 1925. p. 121.

threw an ink pot at him, and nussed him, as shown by a spot which is still to be seen on the wall of the Warthburg. These noises were accompanied by attacks of giddiness which sometimes caused him to fall from his stool and rendered work impossible. As he grew older, his deafness became pronounced and was accompanied by severe cardiac distress. All these things were to Luther certain evidence that his personal devil was attacking him. Dr MacLaurin thus wonders whether his severe tinnitus was not measurably the cause of his militant religious zeal and whether there would have been any Reformation if Martin Luther had not had Memere's disease.

In Advanced Years—A consideration of the deafness which first comes in, say, the sixties should be included. This is usually a nerve form. Here a matter-of-fact view may consider the patient lucky in having lived his life and done his bit before the handicap comes. But hard indeed is his lot if the deafness is at all considerable. Confusing noises are particularly trying in this type of deafness, and group conversations or telephone exchanges are difficult or impossible. Here the patient finds himself infirm ere his time and forced to drop out of church, club, committee and social life just when they are most interesting and indeed essential to happiness. He who is deafened at 65 feels as though he had reached the four score years of the psalmist when there is much labor and sorrow, and, contrary to the Scripture, it is not soon gone and there is no flying away. Lucky is he who has his hobbies, delights in reading or writing, in carpentering or gardening. Creative music is not shut away, for symphonies can continue to sing just as clearly in the mind of a deaf Beethoven as they can for the hearing. Deafness may help concentration, as it did with Thomas Edison. But for the noncreative mind an encroaching senile deafness is a great trial, adjustments are well-nigh impossible, a narrowing enforced isolation makes a sunny optimist into a chastened dependent. Fortunate is he or she if a congenial cotraveler on life's road completely understands and gaily keeps step, through sunshine or shadow, down through the ebbing years.

ADJUSTMENTS

Nature is resilient. Man shares in this attribute. And the younger he is, the easier the adjustment. When a child is born deaf, the process is very different. Education, the growing up among hearing people, the life that must be lived among those who have a sense that he does not possess, is, of course, a laborious and difficult task. But at least this child is not sound-conscious and never can completely realize the music he has lost.

Mechanical Measures—The hard of hearing child must make many adjustments. Under kind parental and trained teacher guidance, this can be done. He learns lip-reading readily.⁴ Group ear-phones are available for teaching purposes. In this modern day a great deal of the burden has been lifted from these handicapped persons. As his age advances, lip-reading is used and is found to be a great help, but it is not quite as easily acquired. And as the acoustic engineer makes electrical hearing aids⁵ more sensitive, less expensive and easier to carry the hard of hearing adult finds them increasingly serving his need. They have their

drawbacks, granted. But what a boon they are to him who can and will use them! These are the two crutches that the hard of hearing must rely on.

Vocational Measures—Vocational adjustments offer an interesting study. Let me deal with two types: (a) the youth who knows in advance that this handicap will exist and must be reckoned with, and (b) the adult whose trade has already been learned and for which his impairment now suddenly unfits him. Type a. For any young man, the outlook is by no means bad. There are relatively few trades or professions in which impaired hearing is of itself a great handicap, once the social and individual adjustments have been made. For instance, in the practice of medicine the expert mechanics of a back brace, of a tonsillectomy, of an ocular refraction or of an appendicectomy are not affected by one's auditory capacity. Type b. For the adult who has learned a trade in which good hearing is essential, a change must be made, and this is hard. Also, the deafened should "secure work where the hearing will be best conserved."² Experts in vocational adjustments for the hard of hearing⁷ urge that a man do, if possible, what he is really fond of. But without a great urge toward one specific trade, the hard of hearing man would be foolish in this keenly competitive age to burden himself with a known handicap, for there are so many tasks where good hearing, though an advantage, is not essential.

It has been pointed out and should be emphasized that the difficulty one thinks of when the vocation of a hard of hearing man is discussed is chiefly a social and psychologic rather than a vocational difficulty. If he can read and carry out his written orders or understand his foreman, his deafness makes him a no less skilled craftsman. In business and the professions, assistants with normal ears are available to make up completely for the individual lack. In most instances, the problem is one of human intercourse. When these social adjustments have been made, the handicap is largely taken care of.

Not Always a Liability—Indeed, impaired hearing may be an asset rather than a liability. A deafened book-keeper or machine operator minds her business and does not spend her time or her neighbor's time in gossip. A handicapped laborer who knows a trade will tend to stick on the job and not leave in search of an easier and better paid task. Three assets may be mentioned: (a) Deafness decreases distractions and increases concentration, (b) it fosters constructive thought, though unfortunately the person may not have the creative genius to respond, and (c) it can and in some cases it does increase the interpretative capacity of the other senses. When seeing an expert lip-reader perform, one realizes at once that here is a keenness of visual perception and appreciation that is well-nigh past comprehension. It is questioned as to whether the actual sense responses are made keener. Certain it is that the mental appreciation of what one touches and sees can be increased. Is it not possible that vocations demanding keenness in color combinations or in perfumery perception or in taste blends or in tactile acuity will find the best performers in the ranks of the hard of hearing? Nature delights in compensations. Does not he who conquers an adversity, never mind of what nature, build for his soul a 'statelier mansion'? Joseph Holland, the famous actor, would not be downed when

⁴ Berry, Gordon. Is Adult Lip-Reading Worth While? *Laryngoscope* 72: 645 (Sept.) 1922.

⁵ De Land Fred. The Story of Lip Reading. Its Genesis and Development. Washington: D. C. Volby Bureau, 1931.

⁶ Berry, Gordon. Aids to Hearing. *Ann. Otol. Rhin. & Laryng.* 32: 807 (Sept.) 1923.

⁷ Peck, Annetta W., Samuelson, Estelle E. and Lehman, Ann. *Parents and the Man: Studies in Social Work for the Deafened*. Philadelphia: F. A. Davis Company, 1925.

at the height of his career his hearing failed him.⁸ Although he could not hear his fellow actors' voices, he continued for some years to act in the plays with which he was familiar. "When the action permitted him to face the speaker, his eyes told him when it was his turn to speak. When his back was turned he counted at measured pace, after having patiently worked out the number of beats each speech of the others would occupy." No one in the theater realized his difficulty so long as he continued to play the old parts. Thomas Edison claimed that his deafness was a great help in eliminating much of the needless gossipings of life and in permitting him to concentrate. The deaf Beethoven said, "I will grapple with my fate, it shall never drag me down" and wrote some of his sublimest symphonies after he could no longer hear a note. Were these the results of this law of compensation? Such historical illustrations seem to prove that impaired hearing offers no excuse for failure.

Social Adjustments—I now return to my earlier premise that the handicaps are primarily in human intercourse. One philosophic friend says that his deafness does not rob him of his beer along life's road, it is just the froth he cannot have. Horace Howard Furness gave up perhaps more than the froth when in declining an invitation to dine he wrote to Charles Eliot Norton "Thanks, more than would fill this sheet, for your hospitable intentions, but it is many many years since I formed a resolution to sit at no table but my own. I am so deaf that I must either wholly listen, or wholly eat and the attempt to divide the two always causes embarrassment to my host and to me, and since nature has thus instructed me to remain in the background, I take the hint and obey her request." And this was the man who ultimately won lasting fame because his deafness forced him to abandon the bar and to take up the great work of his life, the New Variorum Shakespeare.

The crux of the difficulty is not so much the exact degree of deafness (though I would be the last to belittle that) for lip-reading and hearing aids⁹ are splendid helps. Nor is the handicap purely a vocational one, though again, the road to success may be rough and steep. The chief trouble is in the person's social relations. Henry Hunter Welles of Columbia Teachers College, in a recent research¹⁰ divides them sharply into the adjusted and the unadjusted. The victim may curse his neighbors, his parents or his God as Pauline Leader did in her remarkable and tragic autobiography, "And No Birds Sing,"¹¹ or he may look out over the world and find it amusing and lovely, as Earnest Elmo Calkins does in his fascinating and whimsical tale, "Louder Please,"¹² or Persis Vose in those delightful sketches "Say It Again."¹³ Much, very much, depends on the influences brought to bear on this unfortunate person but if only a parent or a dear friend or an understanding doctor once leads him "into green pastures and beside still waters," the rest he can do. Self-satisfaction, success and happiness are assured to him who overcometh.

In Harold Hays' excellent book "The Modern Conception of Deafness,"¹⁴ Miss Betty Wright discusses the "by-products" in this constructive effort.

Not every student of lip-reading becomes a good lip reader but the by-products 'possess a market value of their own. These by-products often bring self-reliance, independence, courage to "carry on", a different outlook on life and increased joy in living, a quickening of the mental faculties, better understanding of human nature, a diminution of sentimentality and the loss of a feeling of inferiority.

The by-products of the use of hearing aids are more tangible than those of lip reading and none the less valuable. The sound of a loved voice, the babble of children at play, the music of the great out of doors, the beautiful phrases falling from the lips of some great lecturer, conversations in the twilight, the talk around the table—are not these compensations enough for the inconvenience of a hearing aid?

How do I know this readjustment is possible? Attend with me one of these conferences of the hard of hearing and see for yourself the enthusiasm and optimism that there abounds. Why? The answer may evade one at first. What heaven has changed the self-centered timid, unhappy patient into this buoyant sunshiny personality? Is it not the age old philosophy of loving your neighbor as yourself—what else? Mrs. Jones used to spend most of her time being sorry for herself and wondering how her former friends could manage without her, now she is so busy thinking and planning for others that there is no time or desire for introspection. Every one wishes to express oneself and enjoy the commendation and appreciation of one's comrades. So does Mrs. Jones who has joined the local League for the Hard of Hearing and now plays bridge, listens to lectures through the group ear-phone, helps an unemployed fellow-sufferer secure a job, assists in the acoustic testing of school children, serves on committees, in short expresses herself and cheers her neighbor. Why shouldn't she be happy?

Assurance Needed—But it is not as simple as it sounds. There are many discouragements and setbacks. The warm understanding of the otologist can do so much when this confused sufferer strikes these bumps. No, it is not sympathy that he wants. Do not apologize for him. Rather assure him. Ask more of him. Give him his "Message to Garcia" and expect him to go through and make good. If one's confidence is genuine, he will not fail.

The Philosophy of the Hard of Hearing—In an effort to put this principle into brief and concrete form, I prepared certain rules of conduct which seemed basic and which, with an allowance for their being formulated for the members of the Federation for the Hard of Hearing, will apply to almost every deafened person who seeks an otologist. I called them "the nine commandments." They try to epitomize the philosophy of that hard of hearing man or woman who endeavors to face and surmount his handicap. They will serve as my closing summary. If they bring to the normally hearing greater sympathy and understanding, or to the hard of hearing greater courage and happiness, I am content.

The Nine Commandments for the Hard of Hearing

1 Thou shalt frankly confess thy deafness to thyself and before thy fellow men. Let there be no deceit nor false pride.

⁸ Calkins E. E. *Lives of the Deafened* Volta Review October 1925 p. 513

⁹ Berry Gordon *Individual Use of Hearing Aids* Auditory Outlook April 1931

¹⁰ Welles H. H. *The Measurement of Certain Aspects of Personality Among Hard of Hearing Adults* New York Columbia University Teachers College Bureau of Publications 1932

¹¹ Leader Pauline *And No Birds Sing* New York Vanguard Press 1931

¹² Calkins E. E. *Louder Please* The Autobiography of a Deaf Man Boston Atlantic Monthly Press 1924

¹³ Vose Persis *Say It Again* A Book of Essays Portland Maine The Southworth Press 1931

¹⁴ Hays Harold *Modern Conception of Deafness* St. Louis Laryngo scope 1933

2 Thou shalt not covet thy neighbor's hearing but shalt rejoice that thou livest in an age when thy handicap can be made so small

3 Early and again shalt thou consult thy otologist and accept every scientific aid he can render

4 Eschew the quack and his devices Easy and broad is the way to his door and many there be that find it

5 Thou shalt join and work for a League for the Hard of Hearing where thou wilt receive encouragement and stimulation for thyself and wilt find happiness in serving thy brother Thus wilt thou march forward with the Federation army that is alleviating deafness throughout the world

6 So love thy neighbor that thou do everything in thy power to help him when he would have speech with thee To this end

7 Thou shalt study lip-reading, in season and out of season

8 Thou shalt secure and use the best ear-phone thou canst discover

9 Triumphantly shalt thou rise above thine infirmity, and so conduct thy life that the world hath need of thee

36 Pleasant Street

ABSTRACT OF DISCUSSION

DR WENDELL C PHILLIPS, New York If the otologists of the country can once get the proper conception of what this service to the hard of hearing really means and then render that service, a great step will have been taken in solving the numerous problems of those with defective hearing I know that many otologists are generally willing to cooperate but it seems impossible to get them to make a practical application on their patients A recent experience will serve to illustrate A woman, aged about 35, suddenly found that the defect in her hearing had reached the point where she feared it might become serious She consulted an otologist in New York, a man who, I supposed, knew what the service idea of the otologist should be She stated that he made a careful examination, told her quite a bit about her case and said he did not think treatment would do any good—that she had probably better investigate hearing devices He then told her not to forget to leave a check as she went out The time has come for otologists to inform themselves regarding the wonderful opportunity they have for rendering a real service to a class of people who need that service Otologists should associate themselves in the service side of the hearing problem with the local leagues for the hard of hearing There are more than 120 of these in the United States that open their doors to the hard of hearing The time has come for psychiatrists to enter into this field because of the peculiar psychology manifested by these patients Finally I wish to emphasize the importance of testing the hearing of school children

DR JOHN F CURTIN, Minneapolis Experience has provided me with a certain method of handling patients with a chronic progressive deafness First is the diagnosis, second a discussion with the patient, in language he or she can understand, of the nature of the impairment I attempt to put myself in the patient's place with his reaction to a frank survey of the possibilities of his hearing condition I ask him to consult a capable internist to evaluate his general physical state and to administer any therapy needed I attempt to correct any local pathologic condition in the ear, nose or throat that suggests a reasonable relationship I enlighten him on the field of aural quickery The patient is then guided in his needs for lip-reading the use of hearing aids and the like He is asked to report every six months for reexamination and advice Most of the patients report to me at regular intervals and I feel that I help them maintain the proper psychological attitude toward their problem

DR GEORGE E SHANBAUGH, JR Chicago Deafened persons are loath to believe that they are as deaf as they are They often know, subconsciously that their deafness is perma-

nent, yet for a long time they will not admit this to themselves, and they try out one form of treatment after another until, finally, they have passed through the psychologic storm of refusing to admit the truth and emerge into the calm of acceptance of their handicap, when they can at last concentrate on lip reading, electrical hearing aids and social contacts renewed through leagues for the hard of hearing In a recent study of 165 severely deafened adults, I found that 115 had progressive deafness which came on insidiously in early or middle adult life and was not accompanied by symptoms of otitis media or tubal occlusion All of the 115 presented the Bezold triad of conduction deafness One third had slight changes in the drum membrane, the remaining two thirds had entirely normal drum membranes The treatments that these 115 typical cases of otosclerosis had undergone is of interest from a psychologic standpoint Soon after the onset of the progressive deafness an otologist was consulted After the usual examination and preliminary series of inflations, many of these patients were told that further treatment would not help them and a certain number were told that they had otosclerosis A few were content and had no further treatments The majority went from doctor to doctor until nearly half had found some one to perform an operation on the nose or throat to help the hearing, while most of these patients had tried some form of quack remedy ranging from osteopathy and chiropractic to roentgen therapy of the pituitary and finger surgery of the eustachian orifice Nearly every one of these 115 patients had the same story to tell During each treatment, whatever its nature, the hearing seemed to be improved, but within a few months it was realized that the hearing was actually no better and, in fact, that the deafness had continued to progress as before An important consideration for the otologist in treating these patients is to appreciate the necessity for early psychologic adjustment and to help these patients make this adjustment Prolonging false hopes by unnecessary treatment and prolonging the stage of psychologic adjustment do not make these people happier

DR W V MULLIN, Cleveland For some years this section has had a committee which has concerned itself with the problems of the hard of hearing I have no criticism of the work of these committees in the past, but I do question the effectiveness of their work The profound impression that Dr Berry's paper has made on every one here today was manifested by the applause he received It occurs to me that if this section wants to do something that would be of estimable value to the deaf, I would suggest, and if the chairman desires I will put it in the form of a motion, that we make it possible that a large number of copies of these inspiring words of Dr Berry's be printed, so that they may be widely disseminated in leagues for the hard of hearing and may reach deaf people rather than be left buried in the transactions of the section, where they will be available only to the few

DR HARRIS P MOSHER, Boston This will come up in the regular business meeting where ways and means will be carefully considered

DR GORDON BERRY, Worcester, Mass I appreciate the kind reception that has been given this paper My effort has been twofold to crystallize for the otologists their own observations, and, through them, to help their hard of hearing patients into a happier and more hopeful philosophy of life I have tried to show how, in the last analysis, the adjustment must be from within, not from without, and that each individual has the power to attain this adjustment and, through it, serenity for himself and happiness for his friends Through kindly guidance and sympathetic understanding, we as otologists have a unique opportunity to help these hard of hearing, individually and in organized groups into this desired adjustment

The Decomposition of Radium—Radium decomposes into radon Radon, in turn decomposes into an element called radium A and this in turn into radium B, radium C, radium C', radium D radium E and radium F (polonium), which disintegrates into lead the stable end-product of this decay series—Evans R D Radium Poisoning—A Review of Present Knowledge *Am J Pub Health* 23 1017 (Oct) 1933

FUNDAMENTAL DIFFICULTIES IN THE
TREATMENT OF PEPTIC ULCER

WALTER LINCOLN PALMER, MD

CHICAGO

The two chief problems of ulcer therapy are, first, to promote healing of the lesion present and, second, to prevent its recurrence. My purpose in this paper is to emphasize the fact that the fundamental difficulty in accomplishing both of these ends is that of satisfactorily combating the digestive action of the gastric juice over adequate periods of time.

It has been known for years that acid gastric juice is able to kill and digest living tissue. In 1859, Claude Bernard showed that the leg of a living frog is digested when introduced through a fistula into the stomach of a dog. This work has been repeated and extended recently by Dragstedt and his co-workers.¹ It has been found that the concentration of pepsin is of relatively little importance compared with the concentration of acid, that digestion occurs with acid concentrations above 0.1 per cent and that the rate of digestion is almost proportional to the acid content. For some reason as yet unknown the gastric mucosa under normal conditions escapes digestion. Also unexplained is the fact that experimentally produced defects of the gastric mucosa heal in spite of the presence of normal secretion. For a long time this observation threw considerable doubt on the theory that ulcer formation results from the digestive action of the gastric juice.

In the course of years, however, a gradually increasing and now almost conclusive amount of evidence has accumulated to show that acid gastric juice is the *sine qua non* of ulcer. This evidence may be summarized

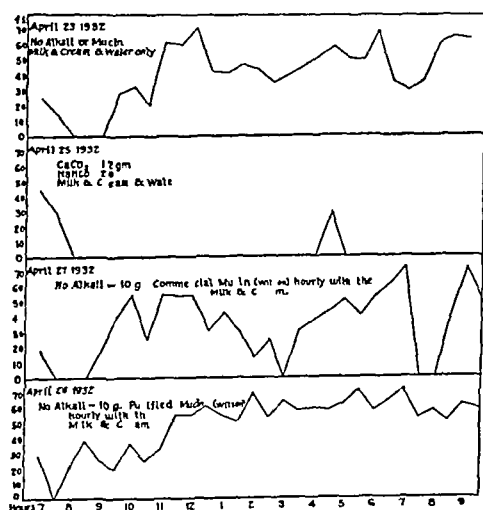


Chart 1—Free acidity easily controlled with alkali but not controlled with mucin. Duodenal ulcer. Half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly thereafter. Alkali was administered with the water, mucin with the milk and cream.

under two headings: the clinical and the experimental. It has been well established that ulcer occurs only in those individuals whose stomachs secrete free hydro-

chloric acid. The literature on this subject has been reviewed elsewhere, but it suffices to state that there has not been reported, up to the present time, any satisfactorily proved case of chronic gastric or duodenal ulcer with complete achlorhydria. When one considers that the incidence of achlorhydria in otherwise normal men and women of all age groups averages about 12 per cent,² this absence of cases of ulcer with achlorhydria becomes of great significance.

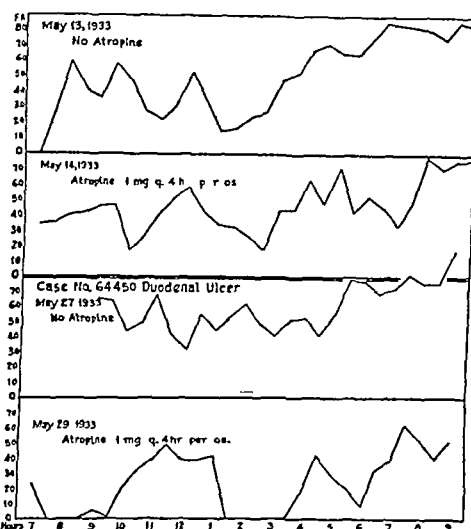


Chart 2—Effect of atropine on free acidity. Duodenal ulcer. Half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly thereafter.

It is also important to recall that the term "peptic ulcer" has arisen from the fact that lesions of this type are found only in those portions of the digestive tract exposed to peptic activity, namely, the lower part of the esophagus, the stomach and the first portion of the duodenum. Operations that result in the drainage of acid gastric juice into the jejunum, ileum or colon may result in ulcer formation at these sites.

One of the most interesting and conclusive proofs of the role of acid is to be found in the ulcers of Meckel's diverticulum, so carefully studied by Aschner and Karelitz,³ Lindau and Wulff,⁴ and others. The ulceration develops in the mucosa of the ileum and is apparently due to acid gastric juice secreted by islands of aberrant gastric mucosa in the diverticulum. Similar lesions have been produced experimentally in the dog by Dragstedt and Matthews⁵ by anastomosing a Pavlov pouch to the end of a loop of small bowel. The acid gastric juice from the pouch drains into the loop of the small bowel and an ulcer results. When the acid is continuously neutralized by alkali, an ulcer does not develop.

The experimental evidence of the direct relationship between acid gastric juice and ulcer formation, resulting in the beautiful work of Dragstedt and Matthews just described, really began in 1923 with the demonstration by Mann and Williamson⁶ that typical chronic peptic ulcer may be regularly produced in the dog by

From the Department of Medicine of the University of Chicago.
Read before the Section on Gastroenterology and Proctology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Dragstedt, L. R. and Vaughn, A. M. Gastric Ulcer Studies. Arch Surg 791 (May) 1924. Dragstedt, L. R. Personal communication to the author.

² Vanzant, Frances R., Alvarez, W. C., Eustermann, G. B., Dunn, A. L., and Berkson, Joseph. The Normal Range of Gastric Acidity from Youth to Old Age. Arch Int Med 49:345 (March) 1932.

³ Aschner, P. W. and Karelitz, Samuel. Ann Surg 91:573 (April) 1930.

⁴ Lindau, A. and Wulff, H. Surg Gynec & Obst 53:621 (Nov.) 1931.

⁵ Matthews, W. B. and Dragstedt, L. R. Surg Gynec & Obst 55:265 (Sept.) 1932.

⁶ Mann, F. C. and Williamson, C. S. Ann Surg 77:409 (April) 1923.

various operations which interfere with the normal neutralization of the gastric acidity by duodenal content. These procedures include transplantation of the common and pancreatic bile ducts into the lower ileum, and drainage of the duodenum into the terminal ileum with anastomosis of the pylorus to the jejunum. Under these conditions, ulcers regularly form in that portion of the bowel into which the acid gastric juice empties. They perforate, bleed and behave in all respects in a fashion similar to peptic ulcer in man. The one factor common to all such successful attempts at experimental ulcer formation is that of interference with the normal neutralization of acid and the subsequent exposure of intestinal mucosa to unneutralized gastric juice.

The available clinical and experimental evidence may thus be seen to give substantial if not conclusive support to the old clinical concept, expressed by Schwarz in 1910 in the dictum "No acid, no ulcer." Acid gastric juice seems to be responsible for the initiation of the lesion for its extension and for its chronicity.

It follows, therefore, that the problem of ulcer therapy is that of protecting the ulcer from the acid. After the lesion has healed, the problem still remains of protecting the mucosa in order that new ulcerations will not develop. The difficulty in accomplishing this is it

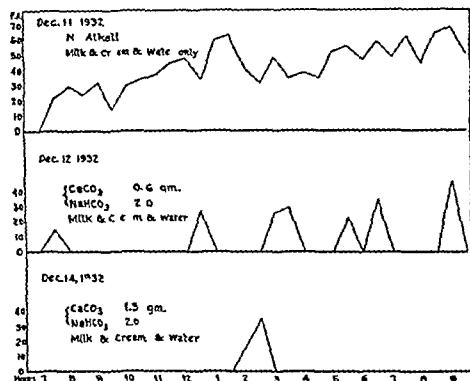


Chart 3—Free acidity easily controlled with alkali. Duodenal ulcer half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a.m. to 7 p.m. and 90 cc of water hourly from 7:30 a.m. to 7:30 p.m. and half hourly thereafter. Alkali was administered with the water.

seems, the fundamental difficulty in ulcer therapy. Theoretically it might be brought about in three ways: first, by coating the surface of the mucosa and of the ulcer with some substance that would protect it from the acid; second, by checking gastric secretion; or, third, by neutralizing the acid after it is secreted. Practically, the desired goal is one difficult to obtain by any of these methods.

My purpose in this study is to present some evidence regarding the ability to control the reaction of the gastric content during the digestive cycle. The method employed has been simply that of aspirating a sample of chyme every thirty minutes from 7 a.m. to 9:30 p.m. and of charting the free acidity. The food intake during this period consisted of 90 cc of equal parts of milk and cream hourly from 7 a.m. to 7 p.m. and 90 cc of water hourly from 7:30 a.m. to 7:30 p.m. and half hourly thereafter. The medication administered is indicated on the charts. They have been chosen as illustrative of the varying conditions encountered and are similar to those previously published.

Chart 1 shows first the curve of the free acidity when milk and cream and water only were taken,

second, the curve when 12 Gm of calcium carbonate and 20 Gm of sodium bicarbonate were taken hourly with the water, third, the result when 10 Gm of commercial mucin was administered with the milk and cream and, fourth, the curve when 10 Gm of purified mucin was given with the hourly milk and cream. The free acidity was well controlled with the alkali but not with the mucin. This chart is quite illustrative of our experience with mucin. It does not control the free

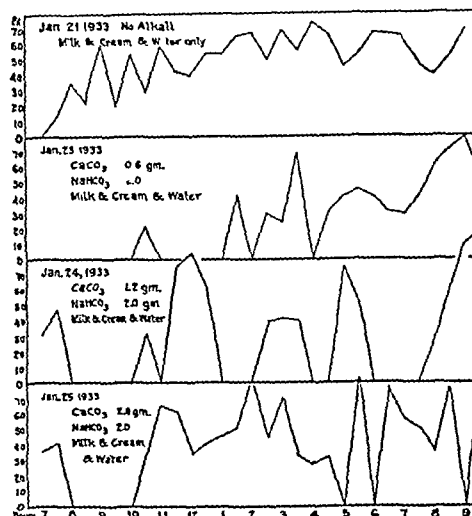


Chart 4—Free acidity not controlled with alkali. Duodenal ulcer half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a.m. to 7 p.m. and 90 cc of water hourly from 7:30 a.m. to 7:30 p.m. and half hourly thereafter. Alkali was administered with the water.

acidity. The possibility exists, however, that mucin may form a coating over the surface of the ulcer and protect it from the acid, as Fogelson⁸ and Ivy suggest. There is considerable indirect evidence in support of this view, but I have no direct evidence to present.

Chart 2 illustrates the variable effects of atropine. It is well known that atropine in sufficient doses inhibits

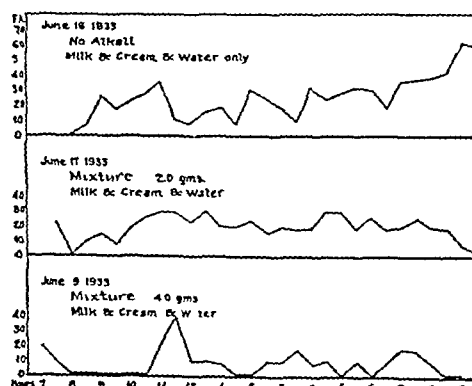


Chart 5—Free acidity easily controlled with alkali. Duodenal ulcer half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a.m. to 7 p.m. and 90 cc of water hourly from 7:30 a.m. to 7:30 p.m. and half hourly thereafter. Alkali was administered with the water. The mixture in this chart in chart 6 and in chart 9 consisted of tribasic calcium phosphate, tribasic sodium phosphate and sodium citrate.

gastric secretion. The question remains, however, whether or not it is possible clinically to prescribe atropine in doses adequate to suppress the secretion of acid. In the first case shown here the administration

of 1 mg of atropine by mouth at four hour intervals had very little effect on the level of the free acidity. In the second case, however, the same dosage resulted in a marked reduction. It is significant that the usual atropine effects, such as dryness of the mouth and visual disturbances, were absent in the first case and quite marked in the second. This observation is quite in accord with the well recognized fact that individual tolerances to atropine vary and that gastric secretion is not affected by atropine unless the other physiologic

trolled by small doses of alkali. Chart 8 shows a case of gastric ulcer recurrent after gastro-enterostomy, in which the free acidity was not completely neutralized even with large doses of alkali.

A further difficulty common to all forms of ulcer therapy, with the possible exception of partial gastrectomy, is that of controlling the night secretion of acid as was first pointed out by Sippy⁹ and as emphasized more recently by Winkelstein¹⁰ and others. Chart 9 illustrates two cases in which the half hour titrations were carried out for a twenty-four hour period. In the first the free acidity was well controlled during the day but became rather high during the early hours of the night. In the second, the acidity was not controlled during the day and became very high during the first part of the night. This continued night secretion may be combated over short periods by the use of atropine and alkali at frequent intervals during the night or by the continuous drip method of Winkelstein,¹⁰ but neither of these methods is feasible for long continued use.

The most satisfactory control of the free acidity is that obtained by the operation of subtotal gastrectomy, which results in the great majority of cases in a complete and permanent anacidity. The incidence of recurrent ulcer after this procedure is lower than that of any other form of therapy. The two chief objections to its general employment, however, are first the relatively high mortality rate even in the hands of the best surgeons and, second, that the occasional recurrences are very serious and can be treated only by further gastric resection.

When one considers the entire subject of ulcer therapy, it is of course obvious that the difficulties vary from case to case. They depend to a great extent on the complications present. In one marked duodenal stenosis may constitute an indication for gastro-enter-

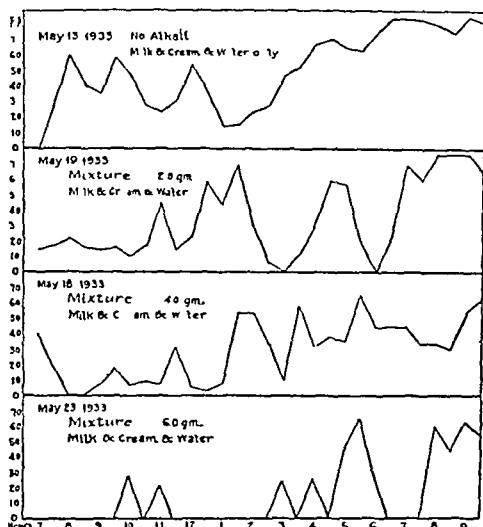


Chart 6—Free acidity poorly controlled with alkali. Duodenal ulcer half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly thereafter. Alkali was administered with the water.

effects are produced. These are so disagreeable, especially when the mental symptoms develop, that the continued administration of effective doses of atropine is scarcely possible.

The first scientific attempt to control continuously the reaction of the gastric content was made by Sippy⁹ in 1915. Chart 3 illustrates the manner in which this is accomplished. The free acidity is well controlled with moderate doses of alkali.

The not infrequent occurrence of alkalosis with alkali therapy when either calcium carbonate or sodium bicarbonate are given in such large doses has led to the employment of substances less likely to disturb the acid-base balance of the blood. One of these is a mixture of tribasic calcium phosphate, tribasic sodium phosphate and sodium citrate. This neutralizes the gastric free acidity satisfactorily in many instances, as is illustrated in chart 4.

There are numerous patients, however, in whom the administration of alkali even in large doses does not result in complete neutralization of the free acidity, as is shown in charts 5 and 6. These are the cases that are most difficult to treat medically and surgically and are the ones in which recurrent lesions are most frequent.

The effect of gastro-enterostomy on the free acidity is rather variable. In some cases a definite lowering seems to result, whereas in others there is no appreciable effect. Chart 7 illustrates a case in which the free acidity after gastro-enterostomy is somewhat lower than it was prior to the operation and more easily con-

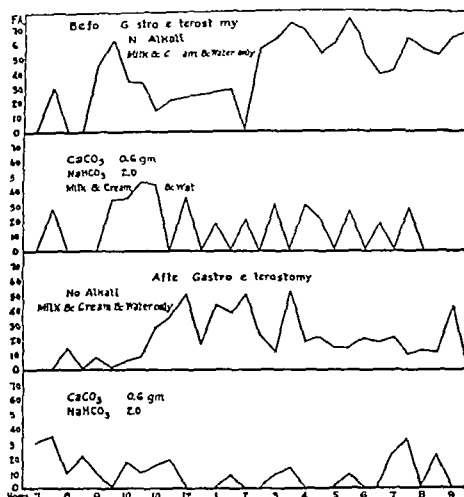


Chart 7—Free acidity before and after gastro-enterostomy. Duodenal ulcer half hour titrations. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly thereafter. Alkali was administered with the water.

ostomy, in another, a large intractable gastric ulcer or a recurrent jejunal lesion may lead one to recommend a partial gastric resection. But in every instance the one fundamental problem is that of protecting the lesion and the mucosa from the digestive action of the gastric juice.

⁹ Sippy, B. W. Gastric and Duodenal Ulcer. J. A. M. A. 64: 1625 (May 15) 1915. Oxford Loose Leaf Medicine 3: 153. 1923.

¹⁰ Winkelstein, Asher. Proc. Am. Gastro-Enterol. A. 1932.

The extent to which this can be accomplished with mucin or some such protective coating is as yet unknown. A satisfactory method of inhibiting gastric secretion is not yet available. Atropine is of some value in this respect and does have a definite place in ulcer therapy. The antacid regimen of Sippy or one of its various modifications in which different forms of alkali are used in varying amounts accomplishes satisfactory neutralization in many instances and is, on the whole, the most satisfactory form of medical therapy

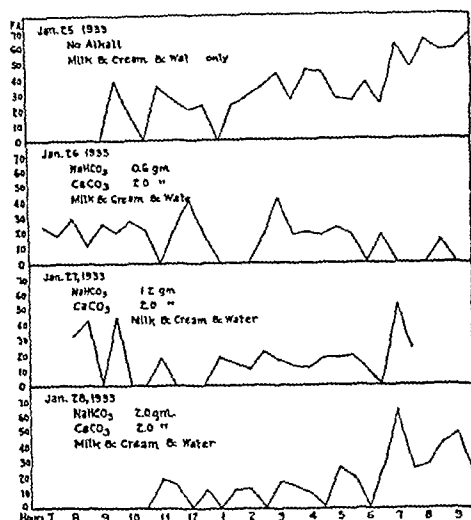


Chart 8—Free acidity not controlled with alkali. Gastric ulcer recurrent after posterior gastro-enterostomy. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly thereafter. Alkali was administered with the water.

now in use. In many cases, however, it is impossible at the present time to obtain complete neutralization for sufficient periods of time to enable healing to occur, and it is even more impossible to reduce permanently the acidity and thus to prevent recurrence. This group of patients with a very high gastric secretion constitutes the most difficult therapeutic problem and illustrates most forcefully the fact that the fundamental difficulty in ulcer therapy is that of combating the digestive action of the gastric juice.

CONCLUSIONS

- 1 Evidence is presented to show that ulcer formation is dependent on the presence of acid gastric juice.
- 2 The fundamental difficulty in therapy is conceived to be that of protecting the lesion or the cells of the mucosa from the destructive effect of the acid.
- 3 Mucin or some such substance may form a coating over the surface of the ulcer and thereby protect it from the attack of the acid, but satisfactory proof of this has not yet been produced.
- 4 Mucin does not accomplish complete neutralization of the gastric free acidity.
- 5 Atropine, in physiologic doses, decreases gastric secretion, but the attendant atropine effects seriously limit its usefulness.
- 6 Gastro-enterostomy may or may not lower the acidity, but rarely produces complete neutralization.
- 7 Subtotal gastrectomy usually results in complete and permanent anacidity. The objections to its general adoption are the relatively high mortality rate and the gravity of the lesions when they do recur.
- 8 Complete and continuous neutralization may be accomplished in many cases by the hourly milk and

cream and alkali regimen of Sippy. Frequently, however, it seems impossible to obtain satisfactory control of the free acidity even with large doses of alkali. In spite of this fact, conservative medical therapy based on the principle of acid neutralization remains the treatment of choice for uncomplicated peptic ulcer.

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ABSTRACT OF DISCUSSION

DR SIDNEY A. PORTIS, Chicago. There is no doubt that the acid secretion is a very important factor, not only in the production but also in the life cycle of a peptic ulcer. I am not convinced that the present method of attack is ideal. Neither am I convinced that surgery should be done for all types of ulcers, but I do firmly believe that large calloused ulcers, ulcers that penetrate and ulcers with marked deformities, as well as ulcers with a recurrent history of bleeding had better not be handled by gastro-enterologists. The sooner such an individual sees a surgeon, the better will be the prognosis. Certainly, in this type of case, gastro-enterostomy has offered but little in addition to what medical management has done. One feels confident that patients who have been subjected to a subtotal gastrectomy, followed by accurate medical management, have been given the best chance to get a more or less complete recovery and to return to their normal place in the economic world. I have never been convinced that complete neutralization of gastric acidity is necessary to promote the healing of an ulcer. My own practice, particularly in the case of a duodenal ulcer, is to lessen the motor drive of the stomach, to keep the pylorus more or less patent, and to devise measures for more rapid and earlier emptying of the stomach. I feel that atropine or its derivatives should not be used to the physiologic limit of checking gastric secretion but should be used only to relieve the associated pylorospasm. In the handling of an ulcer patient, one must recognize the fundamental contributory factors in the production of an ulcer and attempt to remove them.

DR CLARENCE F. G. BROWN, Chicago. Fifteen years ago I was taught that if the acids are controlled the ulcer will heal, and for the last fifteen years I have been trying to control acidity. The difficulty sometimes seems to be that the more the patient is treated the higher the acids become. The remarkable thing is that during that time in many instances, in fact, in most instances, the ulcer is healing. It has been difficult to reconcile the old teaching of Schwartz "the less acid or no acid no ulcers," with the experience at times that "the more acid

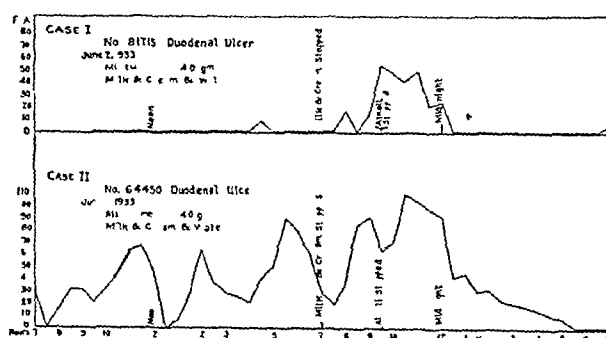


Chart 9—Difficulties in day and night control of free acidity. The patient was given 90 cc of milk and cream hourly from 7 a m to 7 p m and 90 cc of water hourly from 7 30 a m to 7 30 p m and half hourly until 9 30 p m. 4 Gm of the mixture was taken with the water.

no ulcers.' If ulcers heal with rising acid there certainly are other defense factors present. This complex might be called a defense mechanism of the stomach. These factors are many, one cannot say it is the hydrochloric acid or it is this or that. First is the ability of the stomach to empty itself, then there is the regurgitation and the modified Boldyreff idea, the chloride metabolism both local and general, the mucous glands and their possible protective secretion and tissue regenerative ability, in the particular patient. Everything one puts in the stomach is a secretagogue. Gruel is a secretagogue, so is soda and so

is mucin. Even water is a secretagogue. An attempt must be made to control the acidities as well as possible. The first thing to do is to improve the patient as a whole. If that is done, the acids tend to normalize. The bowel must be rendered normal, that is, functionally normal, and that tends to normalize the acidities. Thirdly, the ulcer must be treated, and, in thinking of the defensive mechanism in the individual case, one must try to choose the treatment which agrees with that particular patient.

DR ROBERT KAPSINOW, Lafayette, La. The title of this paper is characteristic of the experiences of many who attempt to treat peptic ulcer. I should like to change the dictum "No acid, no ulcer" to "No ulcer in the presence of acid if the mucosa is healthy." I have also treated the acidity by chemical neutralization and protected the mucosa with colloids. Some time ago I produced ulcers in healthy dogs with healthy mucosa surgically, and I was surprised to see how rapidly the mucosa would heal in spite of the fact that I introduced more acid into the stomach. I was one of those quoted in the author's paper who deflected bile from the duodenum by a simple experiment connecting the gallbladder with the pelvis of the kidney and ligating the common duct, and in a very large percentage of cases produced peptic ulcers. Later I reconnected the biliary tract and only a certain number of these ulcers were cured. I am not convinced that acidity is the entire picture in controlling the healing of ulcers. I believe that if ulcers are classified according to the anatomic origin, and the patient is treated systemically and his regenerative powers are built up, success will probably result. Those who heard Dr Levine's paper on the nonspecific treatment of ulcers with Brooks's hemoprotein were surprised at his remarkable results, I am sure. His object was to attempt to build up tissue regeneration and allow the stomach to repair itself locally. It seems as if it might be a useful therapeutic agent to try in those people whose ulcers recur in spite of all forms of therapy.

DR G. A. HENDON, Louisville, Ky. It has always been an accepted fact that any ulcer of any organ of the body, unless it is of syphilitic, tuberculous or cancerous type, will heal if the organ involved can be put at rest for a sufficient length of time. Acting on this principle, I have been able to cure twenty-three ulcers, some of which had histories dating back eleven or twelve years. The case of longest duration dates back four and one-half years and there is no evidence of recurrence. I have been able to put a pound a day for thirty days on patients without any difficulty. I do this by a process that I call venoclysis, a description of which appeared in *THE JOURNAL*, Oct. 18, 1930. With this method I am able to supply nutrition to the system for a period varying from ten to fifteen days with nothing at all entering the stomach except water. The stomach under the conditions apparently goes to sleep, folds up and becomes alkaline, and the ulcer gets well. It is the most startling and the most impressive spectacle that I have seen in medicine, particularly in connection with massive hemorrhages. I control those massive hemorrhages almost instantaneously and without any difficulty. I accomplish this by a method I have developed of supplying nutrition continuously into a vein of the arm or the leg. Fifteen days has been as long a period as was found necessary.

DR SARA M. JORDAN, Boston. I feel, as Dr. Palmer does, that acid is the predominant factor. It may well be associated with the motor drive that Dr. Portis mentioned and the other factors that have been mentioned, but it seemed to me in reviewing a considerable group of duodenal ulcers that the successful cases were those in which good remissions were found. They were those in which the acid decreased and especially those in which the night secretion of acid was found to have decreased during treatment in the hospital. It seems to me that is a very definite and important factor.

DR A. L. LEVIN, New Orleans. Years ago Moynihan asked the question "Why is it that the gastric cell born reared and developed in an acid medium should all of a sudden be afraid of an acid?" I do not believe that hydrochloric acid is the factor which prevents healing of a chronic peptic ulcer. The various methods of treatment to control the gastric acid are probably physiologically not correct. Every human machine

is provided with a mechanism to defend itself against a process of degeneration that might develop during the course of its existence. The aim in the treatment of lesions of the body anywhere should be to increase the power of regeneration and to destroy the destructive agents. I believe that the nonspecific proteins which are coming to the fore in modern medicine are a promising medium to heal peptic ulcers. I have made clear my views in this regard in a paper on this subject presented this morning in the Section on Pathology and Physiology. It is only a question as to what type of nonspecific protein should be selected for that purpose.

DR WALTER L. PALMER, Chicago. The point I hoped to make is that ulcer is an interaction between acid and mucosa. No one knows why the normal stomach is not digested by the gastric juice within it or why ulcers heal in spite of high acid and why some stomachs are perfectly normal and yet have just as high an acidity as is found in ulcer. These are unsolved problems. But there is this definite relationship between ulcer and acid. I agree that the mucosa is diffusely involved, as Konjetzny has shown, but this also is probably due to the action of acid on the mucosa. The problem, then, is: Can the mucosa be protected or the acid be done away with?

FETAL MORTALITY IN THE TOXEMIAS OF PREGNANCY

C. H. PECKHAM, M.D.
BALTIMORE

During recent years there has undoubtedly developed an increasing tendency to view the various toxemias of pregnancy with greater concern than was hitherto the rule excepting in the case of eclampsia. In the latter condition the immediate maternal mortality has always been sufficiently high so that all forms of therapy have concerned the mother, and the outcome to the child has received little regard. Such a course of procedure, however, has not pertained to the other toxemias of pregnancy, and it has been a rather general custom to treat such cases by palliative means until the pregnancy reached term or the child attained a definite period of viability. More recently the wisdom of such a procedure has been seriously questioned. It is generally agreed that chronic nephritis is definitely aggravated by pregnancy, the severity of the condition after pregnancy is much advanced over that pertaining before it, and the amount of renal damage suffered is in more or less direct ratio to the duration to which the pregnancy is allowed to continue. Also, there is reason to believe that a considerable number of women suffering from a non-nephritic variety of toxemia, and in whom the pregnancy is allowed to continue, will be found to have a definite chronic nephritis some months after delivery.

These rather latent dangers of the toxemias become evident when follow-up studies are made some months or years after delivery. Thus, in 1931, Stander and I found that in a series of patients with undoubted nephritic toxemia who were restudied from one to ten years after delivery, 42.53 per cent had already died from chronic nephritis. It was also shown that pregnancy subsequent to the diagnosis of nephritis materially shortened the patient's average expectancy of life and hastened the fatal outcome. Moreover, Stout and I found in a series of 515 consecutive patients suffering from the various toxemias of pregnancy,

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Read before the Section on Obstetrics, Gynecology, and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

excluding vomiting and eclampsia, that 40 per cent had a definite nephritis, usually arteriosclerotic in type, four or more months after delivery

What, then, is to be one's opinion as to the advisability of allowing a toxemic pregnancy to continue to term or near term? Obviously the only reason for not immediately emptying the uterus is the desire to

TABLE 1—Gross Statistics of Patients in Series

	Number
Patients	499
Pregnancies	529
Maternal deaths	11
Abortions	21
Fetal deaths	58
	Percentage
Fetal mortality	11.42
Total mortality	14.93

obtain a live child. Unfortunately, it often cannot be determined prior to delivery whether a given case of toxemia is nephritic or non-nephritic in character. I believe that the severer the toxemic manifestations, and the earlier in pregnancy they appear, the more probable it is that the case will eventually show chronic renal involvement. It is my aim in this paper to study these various signs and symptoms of toxemia of pregnancy in their relation to fetal mortality and to determine whether or not in the severer forms the outcome for the child counterbalances the increased risk to the mother.

For this purpose I have analyzed the course of 623 consecutive cases of toxemia followed to a termination of the pregnancy in the obstetric service of the Johns Hopkins Hospital from June 1, 1926, to May 31, 1930. Included in this group are twenty-six cases of toxemic vomiting and fifty of eclampsia, and the fetal mortality in these is considered separately. In the remaining patients the outcome to the child is studied from the following points of view: race, age

toxemia, as diagnosed four or more months after delivery. The latter analysis was done because it is my opinion that in many instances of toxemia an accurate diagnosis of the type of condition at hand cannot be made until several months after delivery of the patient.

It will be noted subsequently that in most instances two mortality percentages are listed. One, termed "fetal mortality per cent," is based on the cases in which the pregnancy proceeded to a period of viability for the child. The other, "total mortality per cent," includes also those instances of pregnancy in which toxemia terminated in abortion, either spontaneous or therapeutic. The latter figures seemed worth including since they give, possibly, a truer picture of the actual risk to the fetus in a given pregnancy.

Twenty-six cases of toxemic vomiting, severe enough to warrant hospitalization, were followed to a termination of the pregnancy. Of these, thirteen went to term with one death, giving a fetal mortality percentage of 7.69. However, there were nine instances of spontaneous abortion, two of therapeutic abortion, one hydatidiform mole, and one patient died undelivered.

TABLE 3—Mortality in Terms of Blood Pressure of Patient

	Number of Cases	Fetal Deaths	Abortions	Fetal Mortality per Cent	Total Mortality per Cent
Systolic					
to 149	79	5	2	6.49	8.86
150 to 179	223	29	4	10.03	11.26
180 to 209	116	16	6	14.50	18.97
210	41	8	9	23.00	41.46
Diastolic					
to 99	67	5	1	7.58	8.96
100 to 119	281	35	1	12.50	12.81
120 to 139	129	9	7	7.35	12.40
140	52	9	12	22.50	40.38
Pulse Pressure					
to 39	49	2	1	4.17	6.12
40 to 59	271	28	4	10.49	11.81
60 to 79	166	21	7	13.21	16.87
80	43	7	9	20.59	31.21

Including these early fetal deaths we reach a total mortality percentage of 53.85 for this series. Such a figure is discouraging and might tend to make one less conscientious in attempting to prolong treatment in cases of severe vomiting for the sake of the child.

There are fifty instances of typical eclampsia in the series, with twenty-four fetal deaths, a mortality of 48 per cent. It is interesting to note that thirty-one of the women who recovered returned to the dispensary for reexamination four or more months after delivery. Seventeen of them were normal and in these there had occurred three fetal deaths, or 17.65 per cent mortality. However, fourteen at this late date showed signs of undoubted nephritis and nine had had still-born babies, a mortality percentage of 64.29.

Among the remaining 547 cases there were 18 instances of twins. In order not to complicate fetal mortality figures, these have been omitted from further consideration. Thus, there are 529 pregnancies in 499 patients for subsequent analysis. Table 1 indicates the outcome to the child in this series, and, excluding vomiting and eclampsia, one finds a gross fetal mortality of 11.42 per cent and a gross total mortality of 14.93 per cent. It may be noted that the latter figure compares well with the one of 15.84 per cent obtained by Stander for a similar series of cases.

In table 2 is depicted the effect of race, age and parity on fetal mortality. The higher figures obtaining among the Negroes were to be expected, and the difference observed would probably be paralleled in a normal series of cases. It will be noted that both fetal and

TABLE 2—Mortality in Terms of Race, Parity and Age of Patient

	Number of Cases	Fetal Deaths	Abortions	Fetal Mortality per Cent	Total Mortality per Cent
Race					
White	245	21	11	8.97	13.06
Negro	284	37	10	13.50	16.55
Parity of Patient					
0	271	23	1	8.52	8.86
1	60	7	1	11.86	13.33
2	41	5	3	10.61	15.71
3	29	2	1	12.50	19.23
4	20	2	3	17.86	30.90
5	23	4	1	27.03	37.21
6	17	4	2		
7	16	1	3		
8	6	0	1		
9	7	3	2		
10 and over	30	7	3		
Age of Patient					
to 16	47	3	0	6.04	6.04
17 to 19	102	6	0	8.92	13.00
20 to 24	139	10	0	20.59	26.11
25 to 29	84	9	10		
30 to 34	69	10	3		
35 to 39	60	15	6		
40	25	5	2		

and parity of the mother, blood pressure systolic, diastolic and pulse, albumin and casts in the urine, the amount of edema, the nonprotein nitrogen, uric acid, and carbon dioxide combining power of the blood, the duration of pregnancy when signs or symptoms of toxemia first became manifest and the length of time from the appearance of these phenomena to delivery, and, finally, the fetal mortality in the various types of

total mortality percentages rose rapidly with increasing age and parity. Since nephritis is found much more frequently in the higher age groups and among the greater parous and since extremely high mortality rates are observed in these groups even when the pregnancy is allowed to progress to a period of viability for the

TABLE 4—Mortality in Terms of Albumin Casts and Edema of Patients

	Number of Cases	Fetal Deaths	Abortions	Fetal Mortality per Cent	Total Mortality per Cent
Albumin in Urine					
None	52	7	1	5.88	7.69
Trace	17	16	2	9.76	10.40
to 1 g Gm	190	15	8	8.24	12.11
2 to 4 g Gm	77	14	4	19.18	23.38
5 Gm and over	26	9	6	30.00	41.67
Not determined	1	1	0		
Casts in Urine					
Absent	299	22	8	8.19	10.00
Present	127	21	1	22.51	30.11
Not determined	3	0	0		
Edema					
None	214	20	6	9.62	12.11
Slight	101	18	8	9.12	11.20
Moderate	66	12	4	18.18	23.98
Marked	0	5	1		
Not noted	2	0	0		

child, it would seem reasonable to be much more inclined to interrupt the pregnancy in patients of this type than in the younger woman and the one with fewer living offspring.

Table 3 indicates the marked correlation between fetal mortality and increasing blood pressure. It might be stated that the figures given represent the highest point of pressure reached prior to delivery. With marked elevation, i. e., systolic pressure of 210 mm or above and diastolic of 140 mm and above the fetal mortality after viability reaches 25 and 22.5 per cent, respectively, and when pregnancies terminating in abortion are included the total mortality becomes over 40 per cent.

TABLE 5—Mortality in Terms of Blood Chemistry of Patient

	Number of Cases	Fetal Deaths	Abortions	Fetal Mortality per Cent	Total Mortality per Cent
Nonprotein Nitrogen					
to 29.9 mg	41	7	2	7.69	12.20
30 to 39.9 mg	211	28	6	10.7	12.25
40 to 49.9 mg	119	12	6	10.62	11.10
50 mg and over	24	7	7	25.00	41.15
Not done	64	8	0		
Uric Acid					
to 4.9 mg	362	0	10	9.46	12.71
5 to 6.9 mg	86	1	1	16.00	18.9
7 mg and over	15	4	1	33.33	40.67
Not done	66	7	1		
Carbon Dioxide Combining Power					
to 35 volumes %	89	17	5	20.24	24.2
40 volumes % and over	36	32	15	9.14	12.88
Not done	75	3	1		

Mortality rates in terms of albumin and casts in the urine and the amount of edema of the patient are depicted in table 4. An increased rate is shown to occur with marked albuminuria or when casts were found on examination of catheterized specimens of urine. The amount of edema was recorded in terms of clinical impression as to degree, and when the edema became moderate or marked the fetal mortality rose to a figure almost twice that observed when no or very slight pitting was to be elicited.

Table 5 is included, since it would seem to indicate that in patients with marked deviation from normal in the chemistry of the blood in terms of nonprotein

nitrogen, uric acid and carbon dioxide combining power, there seems to be a definite increase in fetal and total mortality percentages.

From the foregoing discussion it would seem evident that in cases of nonconvulsive toxemia in which the pregnancy was allowed to progress to a period of theoretical viability for the child, fetal mortality increased directly and definitely in proportion to the severity of the toxemic process. Also, it might well be inferred that in a toxemia severe enough to cause some concern for the mother the result to the child is sufficiently hazardous so that temporizing with the patient for the sake of the offspring is not justifiable.

In table 6 are included only those patients in whom the duration of pregnancy at the time of first appearance of toxemic signs was definitely known from dispensary records. In other words, all these patients

TABLE 6—Mortality in Terms of Period of Pregnancy at Time of Appearance of Signs of Toxemia and Duration of Pregnancy Following the Appearance

Time of Appearance of Signs	Number of Cases	Fetal Deaths	Fetal Mortality per Cent
In Months When Known			
to 3 months	11	7	63.63
4 to 6 months	22	1	4.54
7 to 9 months	60	3	5.00
8 to 9 months	111	10	8.62
9 months and term	141	4	2.84
At Delivery When Known			
to 9 months	207	15	7.2
1 to 9 months	92	7	7.61
2 to 9 months	42	8	19.04
4 months and over	9	6	66.67

were normal when first seen and the toxemias developed while they were under observation. I believe that over 90 per cent of toxemias manifesting themselves prior to the seventh lunar month are nephritic in origin. It will be seen that the fetal mortality in patients who developed the toxemia during the last month of pregnancy was excellent, only 2.84 per cent. However, a steady increase obtained with each month of earlier development. In two fifths of the women in whom the toxemic process developed prior to the seventh month but carried to a period of theoretical viability, the child was either stillborn or died in the first two weeks of life. Conversely, the highest mortality figures are found in the patients allowed to progress the longest time between development of toxemic signs and delivery of the child.

TABLE 7—Mortality in Terms of Type of Toxemia (Late Diagnosis)

	Number of Cases	Fetal Deaths	Abortions	Fetal Mortality per Cent	Total Mortality per Cent
Ultimate Result					
Died	11	2	4	25.57	54.54
Did not return	139	10	1		
Returned					
Low reserve kidney	148	12	2	8.22	9.46
Preeclampsia	11	8	1	16.00	17.66
Nephritis	13	26	1	19.67	23.43
Unclassified	7	0	0		

These figures would seem to permit two general statements. The outcome to the child renders dubious the wisdom of attempting to carry a patient in whom toxemia appears before the child is viable. Moreover, with the child definitely viable and a toxemia appearing its best chance seems to lie in reasonably prompt induction of labor.

The fetal and the total pregnancy mortality are portrayed in table 7. It will be noted that the fetal mortality for the general clinic population was about 5.5 per cent. The outlook for the child in cases of low reserve kidney was rather favorable, and a total mortality percentage of 9.46 was obtained. However, preeclampsia denotes a much more unfavorable prognosis (17.66 per cent) and in this series more than a fourth of the pregnancies associated with chronic nephritis terminated unfavorably to the child. The rates in vomiting, and eclampsia have already been commented on.

Two more items affecting the prognosis to the child might also be considered. The mean weight of babies born to women with low reserve kidney was essentially the same as with normal patients. However, in the preeclamptic, eclamptic and nephritic groups the weights, although essentially equal among the three types of cases, averaged from 11 to 12 ounces (310 to 340 Gm.) below the general clinic population. Also, the percentage of women able to nurse their babies successfully was far lower in these three groups.

COMMENT

The present study was undertaken to determine the fetal mortality in a series of consecutive deliveries of patients suffering from the various toxemias of pregnancy and also to correlate such mortality rates with the clinical course of the toxemias. If possible, it was desired to answer the questions as to whether the results to the child were good enough to warrant temporizing with the patient in the severer cases, and also whether or not the increased risk to the mother attendant on such temporization was counterbalanced by a favorable prognosis for the child. The mortality rates given are two: fetal mortality in terms of deaths of viable infants, and total mortality, which also includes pregnancies terminating spontaneously or by artificial means before a period of viability for the child is reached.

The prognosis for the child was good in cases of toxemic vomiting, provided the pregnancy progressed to a period of viability for the child. However, in about half of the cases in this series the pregnancy terminated in abortion, usually spontaneous, and the total mortality percentage found was 53.85. The fetal mortality in eclampsia was 48 per cent.

In the remaining patients the toxemia was analyzed from various clinical standpoints and correlations were made with fetal mortality. Higher mortality rates obtained in the Negro than in the white race. Advancing age and parity of the patient were attended with increasing risk to the child. Definite correlation was obtained between the mortality and the rising blood pressure (systolic, diastolic and pulse), the increasing albuminuria, the presence of casts in the urine and the amount of edema. In patients with marked deviation from the normal in the chemistry of the blood, the outlook for the child became poor.

The later in pregnancy the toxemic signs developed, the better was the prognosis for the child. Conversely, in cases in which such signs developed before the child was viable the chances of its survival became extremely poor. It is my opinion that the great majority of such cases are nephritic in origin. Also, the risk to the fetus increased directly with the length of time elapsing between the onset of the toxemia and delivery.

A high fetal mortality rate obtained with all the types of toxemia of pregnancy. The outlook of the child in cases of low reserve kidney, however, was not bad. It

became more dubious in preeclampsia, and in chronic nephritis, including the mildest types, a total mortality percentage of over 25 prevailed.

From the foregoing discussion it would seem that the following statements can be safely made. In the milder cases of toxemia the pregnancy may be carried until the child is undoubtedly viable, this carries with it a good prognosis. Once such a period has been reached and the toxemia persists, it would seem preferable for both patient and fetus to induce labor by conservative means.

In the cases with severer toxemic manifestations it seems that the outlook for the child is so poor that it should have little effect on the treatment of the patient, all efforts being made to deal with the condition of the mother. The immediate mortality to the patient, should eclampsia eventuate, is still so high and the later effects of nephritis so severe that only in the very exceptional case and after detailed explanation to the patient and her family of the risks involved is one justified in prolonging pregnancy in cases of severe toxemia for the sake of a child whose chances of survival are relatively poor.

ABSTRACT OF DISCUSSION

DR. JOHN W. HARRIS, Madison, Wis. Dr. Peckham's paper is added evidence of a marked change in thought concerning the ultimate prognosis in the late toxemias of pregnancy. Until the past few years it was generally thought that, save in the frankly nephritic toxemias, recovery from the acute attack left the patient uninjured so far as renal sufficiency was concerned. In fact, some have stated that such patients were even less likely to suffer from similar complications in subsequent pregnancies. In the past few years, follow-up studies of patients suffering from the late toxemias of pregnancy have shown that this degree of optimism is not justified. Several years ago I found that more than half of the patients who had been previously diagnosed as preeclamptic showed unmistakable signs of chronic nephritis one year subsequent to delivery. Some of the studies by Dr. Peckham and by others have resulted in similar conclusions. Dr. Peckham contributes a somewhat gloomy prognosis so far as the baby is concerned. It would seem that, unless the toxemia responds promptly to ameliorative measures, it is hardly justifiable from the standpoint of the mother and the baby to delay interruption of pregnancy.

DR. FRED L. ADAIR, Chicago. I am glad that Dr. Peckham presented this topic from the aspect of the fetus. One could accept the tenet that there is never anything to gain for the mother with toxemia of pregnancy from prolonging the pregnancy. The only reason for temporizing in these cases has been the possible benefit to the fetus. I have long felt that there is no use in temporizing with a toxemic case when the fetus is previsible unless it is approximately viable, nor is there any use temporizing with a case of toxemia after the fetus has once reached the period of viability. Therefore I have felt that the only type of case of toxemia in which there was justification for temporizing from the standpoint of benefit to the fetus was when the period of gestation was on the borderline between previsibility and viability. In some of those cases the period of gestation can be carried along a week or so, so that there may be a fair chance of obtaining a viable fetus. A few figures from a series of about a thousand autopsies that were carried on while I was in Minneapolis will give some idea of the number of fetuses which die as the result of toxemia in the mother. There were 114 nonconvulsive cases of toxemia in which the fetus died. In other words, over 10 per cent of the fetal deaths in the series resulted in cases of nonconvulsive toxemia. In convulsive cases there was a somewhat smaller percentage, approximately 30, making in all, however, a figure of 144 cases out of something over a thousand fetal autopsies. So far as the causes of fetal death are concerned, they are quite varied. In the nonconvulsive cases, respiratory complications were found responsible with pulmonary atelectasis in 63 of the cases, suffocation in 17, aspiration in 11 and birth trauma in 32 of

the instances, placental degeneration was supposed to have accounted for 24 of the deaths, and 29 were attributed to the toxemia. In the convulsive cases the pathologic examination justified death as due to respiratory difficulties, with pulmonary atelectasis in 11 and suffocation in 6, birth trauma was the major cause of death in these cases, accounting for 15. I will not enumerate the causes of lesser frequency.

DR JOSEPH B. DE LEE, Chicago. It is generally known that the mortality of babies in cases of toxemia and particularly in cases of chronic nephritis in pregnancy is very high. It is also known that women with acute toxemia are likely to have damage to their kidneys later on, which will shorten their lives. It is particularly well known that women who have chronic nephritis in pregnancy have the damage to their kidneys exaggerated. In view of those facts it is important to realize that such a woman having a baby places a high valuation on that one baby's life. She ought not to have any more babies, certainly not more than two. Therefore the method of delivery selected in the cases of toxemia and chronic nephritis should be one that offers the least possible damage to the baby. Babies of women that are toxemic are vulnerable, their brains are soft, their blood vessels are fragile, and they are more likely to suffer damage during the natural processes of delivery. In view of these facts it is very important to consider the method of delivery, the method of inducing labor, in cases of chronic nephritis during pregnancy. I would like to suggest that the low cervical cesarean section under local anesthesia, with an emphasis on the local anesthesia, be very very thoroughly considered in the delivery of premature babies in toxemic women and chronic nephritic women.

DR A. C. POSNER, New York. The obstetric service of the Harlem Hospital, New York, has made a special study in an attempt to reduce the fetal mortality in the toxemias of pregnancy for the five years beginning Jan. 1, 1928, and ending Dec. 31, 1932. These statistics are based on 9,068 consecutive maternal admissions. The mortalities are uncorrected. In forty-two cases of pernicious vomiting of pregnancy the fetal mortality was 38.09 per cent. The difficulty of classifying toxemias is apparent. We do not classify chronic nephritis as a toxemia but as a very serious complication of pregnancy. The fetal mortality in thirty-five cases of chronic nephritis was 20 per cent. The fetal mortality in 153 cases of increased blood pressure without any other symptoms was 9.80 per cent. The neonatal mortality for this group was 4.57 per cent. In the severe toxemias of pregnancy, such as pre-eclampsia, the fetal mortality has been reduced from 40 per cent in 1928 to 5.55 per cent in 1932. The fetal mortality for 186 cases of this group was 13.9 per cent. The neonatal mortality has been reduced from 18.5 per cent in 1928 to 4.42 per cent in 1932. The average neonatal mortality for these 186 cases was 7.52 per cent. I disagree with Dr. Peckham on one point. I feel that, if he will compare an equal number of toxic Negro patients who have had prenatal care and have a negative Wassermann reaction with a similar white group, the fetal mortality will be of equal or lesser incidence among the Negroes. The reduction of the fetal mortality in toxemias has been accomplished in three ways: 1. Increased attendance at the clinic. This has followed decreased employment among women. In 122 cases of the pre-eclamptic group in which prenatal care was given, the fetal mortality was 9.83 per cent. In 64 cases of this group in which prenatal care was not given, the fetal mortality was 25 per cent. 2. Establishment of a special toxemia clinic. Here each case is studied in association with the department of metabolism. 3. Induction of premature labor. All patients with toxic symptoms or with systolic blood pressures of 140 or more are hospitalized, treatment is immediately instituted and if the child is viable and no improvement is noted in forty-eight hours, induction of labor is instituted by a modified Watson method. If this is unsuccessful, the membranes are ruptured and induction is repeated. Successful chemical induction has been accomplished in over 85 per cent of these cases. Early recognition and treatment of toxemia have made eclampsia a very rare disease among clinic patients. In 1928 there were 23 cases. In 1932 there were 9. The incidence was 1 to 78 admissions in 1928. In 1932 it had decreased to 1 in 200 admissions. The fetal mortality has been reduced from 46 per cent in 1928 to 11 per cent in 1932. The fetal mortality of 65 cases of eclampsia during these five years was 35.38 per cent.

DR C. H. PECKHAM, Baltimore. I would emphasize once more the difficulties attendant on the proper diagnosis of a given toxemia of pregnancy. It is the policy at the Hopkins Clinic in cases of undoubted nephritis not to allow the pregnancy to continue. However, we find more and more that some of our clinical impressions as to a given toxemia during pregnancy are wrong. We can diagnose a far-advanced case of chronic nephritis or eclampsia, but in the milder toxemias particularly if the patient appears only subsequent to the seventh month of her pregnancy, it seems almost impossible to tell whether she has a nephritic or a non-nephritic toxemia, and hence our treatment, so far as the child is concerned, becomes a very difficult problem.

THE VALUE OF PSYCHOANALYSIS AS A THERAPEUTIC PROCEDURE

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AND

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For the past twelve years we have referred various of our patients to accredited psychoanalysts. Our experiences form the basis of this report.

The psychoanalytic movement has had a widespread influence on human thought and conduct. Not only have Freud's monumental contributions influenced modern medicine and related sciences such as psychology, sociology and criminology but they have also been reflected in the seven arts. The internist has a pragmatic interest in psychoanalysis apart from the point of view of general culture. He seeks to define the indications for and the limitations and results of this new therapeutic procedure.

Before detailing our data, terms must be defined. One must state (a) the qualifications for a psychoanalyst, (b) a conception of what constitutes an analysis, and (c) a description of the type of clinical material referable to the psychoanalyst for the analysis.

THE PSYCHOANALYST—HIS TRAINING AND QUALIFICATIONS

It is our opinion that the psychoanalyst should be a licensed physician. The additional qualifications laid down by such bodies as the New York Psychoanalytic Society are highly desirable if not mandatory. The psychoanalyst should have had a general internship, he himself should have submitted to a psychoanalysis by a previously accredited psychoanalyst, and, finally, he should have performed, under the guidance of a society such as the New York Psychoanalytic Society, at least two probatory analyses to establish his fitness to go on in his special field.

Beyond these definite stipulations and because of the peculiar nature of the field the internist who refers patients to a psychoanalyst should choose an individual who is himself adjusted to his environment and whose character, habits and mode of life are impeccable.

THE UNQUALIFIED PSEUDO-ANALYST

The lay analyst and those accredited physicians who, without special training, presume to practice analysis have been responsible for many great tragedies. These instances should not be cited to the detriment of the psychoanalytic movement as a whole. Such people and certain of the literary intelligentsia have given wide spread circulation to practices and thoughts that are not only not approved of but actually frowned on by the accredited psychoanalyst. By all odds the most

dangerous enemy of the psychoanalytic movement is not the outspoken critic but rather this fringe of borderline enthusiasts and opportunists. It would be a grievous error if the internist were to condemn the method of psychoanalysis and its reputable practitioners for the sins committed by the counterfeiterers.

THE PRACTICE OF PSYCHOANALYSIS

In our completed cases the psychoanalyst has required the attendance of the patient for hourly visits from three to five times a week over a period of time extending from six to twenty-four months and usually averaging sixteen months. A complete psychoanalysis is consequently an exceedingly time consuming procedure.

It is the practice of most psychoanalysts to require that the patient make a significant economic sacrifice. As this constitutes an important practical limitation of the method, it will be necessary, unfortunately, to go further into the economics of psychoanalysis.

The psychoanalyst must undergo long, arduous and difficult training, and since he can handle only between twelve and twenty-five patients annually, he must collect a rather substantial fee from each of his patients. Hence, the cost of an analysis far exceeds that of a major surgical procedure, and from a purely economic standpoint it is almost equivalent to a period of hospitalization. Very rarely, in our experience, do analysts take on free patients, and very rarely do the free patients, for whatever reason, complete the analysis. In such instances the patients usually complain of lack of interest on the part of the analyst, and the analyst on his side explains that these patients who make no economic sacrifice are less cooperative than those who do make an economic sacrifice. We have never been particularly impressed with the latter explanation. To an exceedingly wealthy patient the fee for the analysis is not an economic sacrifice, and it has been our experience that in those instances both the analyst and the patient persist quite well with the analysis. In our wide hospital and dispensary experience we have never seen a "free" patient completely analyzed, and certainly this cannot be for want of material.

The economic aspects of psychoanalysis are therefore of considerable importance. It is one therapeutic procedure that is directly dependent on the patient's financial status, and thus sharply limits the applicability of the procedure. This is not so much said in criticism of the individuals who practice psychoanalysis as it is a statement of fact.

THE CHOICE OF CLINICAL MATERIAL FOR PSYCHOANALYSIS

In our practice, clinical material available for analytic treatment may be subdivided into four groups.

GROUP 1—Patients suffering from frank psychoses such as schizophrenia, manic depressive insanity and the symptomatic psychoses are promptly referred to the analyst who shows an increasing disposition to reject them for analytic treatment. That this point of view is in accordance with results is evidenced by the fact that, in this group in which the need is greatest, we did not encounter a single satisfactory therapeutic result. The conscientious analyst will accept for therapy only those patients in whom the diagnosis of the frank psychosis is either questionable or whose condition is not far advanced (early schizoid or mild manic depressive patients) not so much in the hope of effecting a cure as of arresting the development of symptoms.

GROUP 2—Patients with behavior problems and maladjustments.

GROUP 3—Patients with simple neuroses and psychoneuroses, such as the various anxiety and compulsion states.

GROUP 4—Patients with visceral symptoms of a functional nature (neurosis *actuelle*, conversion hysteria, autonomic imbalance).

In the latter three groups the vast majority of the patients are ordinarily handled by the internist. Frequently reassurance that there is no organic disease or a common sense and sympathetic approach to a social problem will go a long way toward the alleviation of symptoms. However, there will always remain a certain number of patients who are resistant to this method of treatment and who, sooner or later, become the plague of the conscientious practitioner. As a general rule, these patients run the whole gamut of therapy both within and without the medical profession. They are usually "cured" recurrently by whatever therapeutic measure or charlatanry happens to be in vogue. Such patients will not realize that their "cure," by whatever method, is always the result of suggestion, and almost invariably, like the proverbial bad penny, they turn up again with their old symptoms or some new equivalent. Frequently these symptoms may actually be incapacitating and always they are exceedingly unpleasant both to the patient and to his medical attendant. Contrary to our practice of promptly referring the true psychotic patients to the analyst, we do not refer patients in the latter groups until we are driven to that procedure by a process of exclusion. In consequence, a result in the latter three groups is a commendable and specific triumph for the analytic method. Analysts who have not had clinical experience must also realize that in these groups there will be obtained a great many successful results which might have been procured by less arduous and less expensive therapy.

THE RESULTS OF PSYCHOANALYSIS

Thirty-three of our patients submitted to a more or less complete analysis, according to the limitations that have been laid down. This does not include our experience with those of our patients who have visited lay analysts or any of the group of charlatans or opportunists within or without the medical profession who, without any qualifications, practice what they call "psychoanalysis."

EVALUATION OF RESULTS

We regard as a specific and successful result the patient who, as a result of his character portrayal, has so rebuilt his personality as to be able to live in harmony in his peculiar and particular surroundings. We regard the result as specific if it could have been obtained in no manner other than by psychoanalysis. We regard the analysis as unsuccessful if the patient continued to have his symptoms after the analysis, if the patient discontinued the analysis, or if the patient was compelled to alter his way of life as a confession of an inability to make an adjustment. We regard as good but nonspecific results those which were obtained when, in addition to the analysis, the patient's way of life was altered in a none too radical way.

1. Bad Results (sixteen cases, 49 per cent).—Suicide (one, 3 per cent). One patient undoubtedly a manic-depressive, committed suicide in the course of his analysis. He had been under analytic treatment for a considerable time by an accredited analyst.

Commitment (six cases, 18.5 per cent). Six patients at one time or another were committed to psychiatric institutions. They consequently either had or developed

true psychoses Two of these patients had schizophrenia, three had manic depressive insanity and one, unclassified by the analyst, in our opinion, was a schizophrenic

Failures (six cases, 18.5 per cent) Six cases were definite and complete failures One of the patients was an intelligent young man who spent eighteen months with an analyst and still presents his anxiety symptoms A group of three middle aged men, with anxiety symptoms and hypochondriasis, could not be satisfactorily analyzed and discontinued treatment The fifth patient was an alcoholic addict who continues to be an alcoholic addict The sixth was a young woman with an anxiety state whose life was almost completely wrecked, probably because of a clumsy analysis In the last instance, the failure is a personal criticism of the physician rather than a failure of the method

Change in Marital Status (three cases, 9 per cent) Three of the patients, including one couple, were divorced As the reason for undergoing analysis by all three patients was to adapt themselves to a situation, we regard the divorce as evidence of failure of the method In one instance, a woman was married to an impotent male Her analysis had for its purpose an attempt to adjust herself to this situation and to preserve her home The fact that she was divorced and that since she has remarried her symptoms have disappeared we regard as a failure of the method, for her analysis was frankly undertaken for the purpose of maintaining her marital status The other two patients were a couple who were also maladjusted Since their divorce they have discontinued analysis The husband became symptom free immediately after the decision for a divorce was made The wife, who is a constitutional inferior, retains her symptoms The acceptance of these patients by the analyst, who clearly understood the reason for the analysis, makes necessary the inclusion of these three patients as bad results

2 *Good Results with Qualifications* (four cases, 12 per cent) —In four instances patients were relieved of symptoms by analysis plus sexual liberation Three of these four were women who had symptoms quite obviously due to sex starvation and the resultant conflict between their biologic urge and the reaction of their conscience Either associated with or as a result of their analysis, all four of these patients indulged in extramarital intercourse, and it is our opinion that the relief of symptoms was due as much to the change in their way of life as to any specific analytic result

In justice to the psychoanalyst it should be stated that in no instance did the psychoanalyst suggest or urge the termination of the period of continence These patients experienced a change in their standards which permitted them to indulge in sexual intercourse without suffering so intensely from the pangs of conscience Whether this change in the moral standards and the liberation of the conscience can be regarded favorably or unfavorably by those of us who practice internal medicine is distinctly a moot question Certain it is that no physician, whether internist or psychoanalyst, should approve of or sanction extramarital sexual intercourse or above all, urge his patient to engage in it One need only point out the definite and tangible dangers of infection and impregnation, to say nothing of the social and moral consequences This statement should not be interpreted to mean that the physician presumes to sit in judgment on the customs and morals of his patient Naturally, if individuals elect to philander, that is wholly their own business,

and it is as presumptuous for us to criticize alleged moral turpitude as it is for us to approve of promiscuity But to return to the patients previously referred to while from a medical standpoint their symptoms were relieved, it is impossible under the circumstances to classify them as therapeutic triumphs of a specific method

3 *Satisfactory Specific Results* (thirteen cases, 39 per cent) —Specific Cures (five cases, 15 per cent) Five patients were specifically cured of their symptoms by the analysis Each of these patients was below the age of 30, all were distinctly of the intellectual class, including two lawyers, a musician and a teacher There were three men and two women in this group One of the men had actively practiced a sex perversion and his visceral symptoms were due to a conflict over this matter He was successfully analyzed and cured He has since married, has children and has been successful in his profession We feel sure that this man was saved from an inferno and that he could not have been saved by any other method The two young women had symptoms dating back to maternal conflicts The one was unable to permit herself to marry as the result of her neurosis and had broken several engagements The analysis was successful Her outlook was completely changed, she married, has two children and has accommodated herself well to a number of difficulties The other young woman has overcome impediments that were obstructing her musical career She is now not only successful in her profession but is happily married as well Two young men in the group with anxiety and conversion symptoms are now successful and happy, both in their homes and in their professions

It is our belief that in these five instances the results were specific and gratifying beyond measure that happiness, usefulness and success were substituted for their opposites, and that the results were attributable to the analysis and could have been obtained in no other way It is worth while to dwell on certain striking similarities in this group of five who were successfully analyzed Each of these patients was under 30, each was of the intellectual class, three of the five were the children of wealthy parents who were able to finance the analysis In only one instance did the patient, by an economic sacrifice pay for his own analysis In the fifth instance the analysis was financed by a parent in medium circumstances, who made a great sacrifice that the analysis might be consummated

Good Results (five cases, 15 per cent) Five patients were helped but not wholly relieved of their symptoms In this group of five, both the patients and the analysts were a great deal more favorably impressed with the results than were we Our modified enthusiasm, in two instances, was due to the fact that the patients are still unstable but so situated in life that they have been subjected to no stress or strain While these two patients, both with anxiety states, are at present symptom free, we question their ability to stand up under provocation A third member of this group was a young physician who was undoubtedly helped but who still presents symptoms of his neurosis at times A fourth patient with an anxiety hysteria under treatment for four years is better but still presents symptoms The fifth patient is a young man with a sexual perversion who has been treated with partial success The four lay patients were distinctly of the wealthy class, the cost of the analysis being defrayed without any great economic strain In the case of the

physician, no fee was paid, though it has been our experience that the usual courtesies are rarely extended to colleagues by psychoanalysts

Behavior Problems (three cases, 9 per cent) Three adolescent patients presented simple behavior problems that were relieved by an analyst without the adoption of a formal psychoanalysis. While these results are good, they are definitely not specific, and it was our feeling that any simple advice would have been equally successful

SUMMARY

Of our thirty-three cases we classify sixteen, or almost half, as failures. This group includes all the true psychotic patients and all the patients beyond the age of 40 at the time of their analysis

Seventeen of the patients, or slightly over 50 per cent, were helped. In five instances, or 15 per cent, it is no exaggeration to say that the cure was specific. In the fifteen remaining cases the results were good but not startling, and at times the result was not specific but due to the modified circumstances, which have already been elaborated

THE LIMITATIONS OF PSYCHOANALYSIS

Our experience may permit us several generalities concerning the limitations of psychoanalysis. At the present time its practice is sharply limited to a small group of adequately trained physicians who cannot possibly handle more than a numerically inconsequential number of patients annually. A second group of limitations with regard to the patient may be subdivided into those relating to the psychiatric status and those relative to the patient's circumstances in life. With reference to the psychiatric status, the true psychoses, and drug addictions, including alcoholism, where the need is greatest, have the least expectation of assistance. The conditions which have responded favorably, in our experience, include the less ominous syndromes such as the anxiety or compulsion neuroses, the simple behavior problems, and conversion hysteria. It must be emphasized again that in the latter conditions the majority will usually yield to simple reassurance or suggestion of any type, and that only rarely, when the symptoms are persistent or debilitating, is the need for analytic therapy justified.

Finally, circumstances other than psychiatric status limits the usefulness of this mode of therapy. Favorable results at the present time apparently cannot be obtained in patients beyond the age of 40. The candidate for therapy must also be in the upper ranges with regard to income so as to stand the expense of a form of therapy which requires attendance from three to six hours a week for well over a year at a fee which is rarely less than \$3 an hour and frequently exceeds \$10 an hour. Again, the patient must be the possessor of a plastic and trained intelligence, for our experience has been that as a general rule the patients are recruited from the professions or the arts and that the average man in the street is wholly unable to grasp or utilize this form of therapy. Despite our receptive attitude toward psychoanalysis as a form of therapy in twelve years we have seen only a handful of patients who have benefited from their experiences.

THE HOPE OF PSYCHOANALYSIS

Despite the narrow therapeutic range and the limitations, restrictions and criticisms of the analytic method and its practitioners, it is our belief that the Freudian

school offers the only intelligent approach toward the successful management of many psychiatric problems. In a broader sense, the newer teachings have widely influenced one's manner of thinking and one's approach to many of the problems that one meets in everyday practice.

It is in dealing with the individual patient that disappointment is so keen and criticism so often in order. The support of the movement as a whole and the analyst as an individual has come for the most part from the public and a few enlightened internists, such as the lamented senior author.¹ Medical school faculties and neurologists, in particular, many of the larger hospitals and medical centers have been and in many instances still are openly hostile to psychoanalysis. If this report tends to crystallize thought and render analysts and their critics more tolerant to one another, it will have served its purpose well.

940 Park Avenue

POCKET-FLAP SCLERECTO-IRIDODIALYSIS IN GLAUCOMA

CHARLES NELSON SPRATT, M.D.

MINNEAPOLIS

In 1912, I began to do the trephine operation. Since 1925, I¹ have employed a pocket-flap in all operations for cataract or glaucoma. In many of the latter operations, the iris inclusion method was used with sclerectomy. The appearance of the eye with a bleb of subconjunctival pigmentation due to the included iris is not cosmetically desirable, and there is danger of irritation from the incarcerated iris. A case in which panophthalmitis occurred owing to a late infection and the return of pain and tension in several other eyes following iris inclusion led me to adopt a suggestion by Herbert,² namely, an iridodialysis. However, instead of cutting the sphincter as he suggests and pulling the tongues of the iris into the angles of the wound, I have combined iridodialysis with a Lagrange sclerectomy and a pocket-flap. In 1894, de Wecker³ suggested sclerotomy with iridodialysis instead of iridectomy. He seized the iris with forceps and dragged it toward the pupil, thus separating it from the attachment.

In the acute form of glaucoma, sclerecto-iridodialysis accomplishes all that simple iridectomy does. It frees the angle of the iris and thus affords drainage into the canal of Schlemm. In the chronic form of glaucoma, if Elliot's trephining or a Lagrange sclerectomy gives relief, this method offers the same drainage. A round pupil is secured, and the patient is not annoyed by excessive glare. Miotics may be used, as the sphincter of the iris is not injured. The conjunctival pocket-flap is thick, and there is less possibility of fistula and late infection.

¹ Dr. Kessel died Dec. 5, 1932.

² Read before the Section on Ophthalmology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

³ Because of lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the Transactions of the Section and in the author's reprints.

¹ Spratt, C. N. The Pocket Flap in a Cataract Extraction. *Am. J. Ophth.* 11: 347 (May) 1928.

² Herbert, H. The Future of Iris Inclusion in Glaucoma. *Brit. J. Ophth.* 14: 433 (Sept.) 1930.

³ de Wecker, L. Sclerotomy simple et combinee. *Ann. Ocul.* 112: 257, 1894. Simple and Combined Sclerotomy. *Tr. Internat. Ophth. Cong.* 5: 343, 1894.

OPERATION

Six grains (0.4 Gm) of sodium amytal or 10 grains (0.65 Gm) of barbitol is given the night before the operation, and the dose is repeated two hours before the operation if necessary. The pupil is contracted

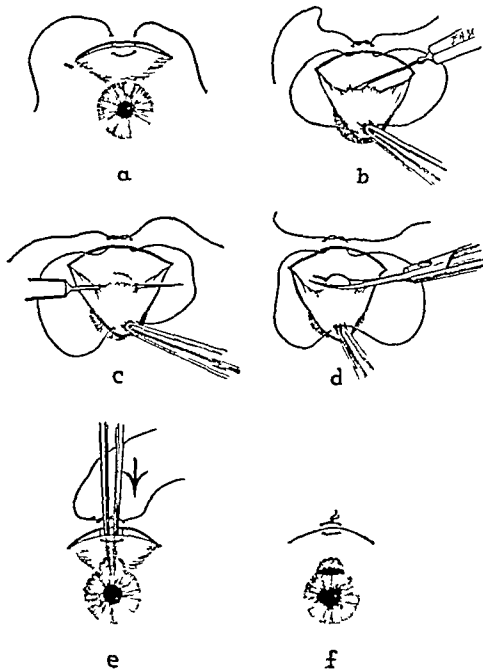


Fig 1—A deep pocket of conjunctiva is formed a sclerotomy after the method of Lagrange is done and the iris is grasped with forceps and is torn loose from its attachment to the ciliary body

with pilocarpine. Anesthesia is secured by the instillation of 4 per cent cocaine into the eye, four times at four minute intervals. A subconjunctival injection of 1 per cent procaine hydrochloride is made over the superior rectus. In unruly patients, the injection into the lids is made after the method of Van Lint. In inflamed eyes, a hypodermic injection of morphine and scopolamine, or ether, or deep orbital injections,

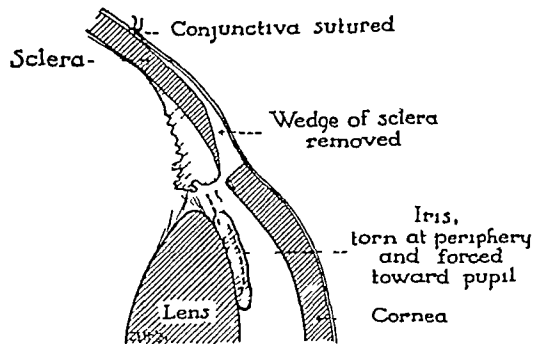


Fig 2—Cross section showing the wedge of sclera removed no stump of iris remains to block the wound

as suggested by Halstead and reported by Hall⁴ in 1884, may be employed. This latter procedure lowers the ocular tension, especially if the epinephrine, in a dilution of 1:1,000, is added. One cubic centimeter of 2 per cent procaine hydrochloride, with from 3 to 4 drops of epinephrine in a dilution of 1:1,000, is used. The conjunctival sac is thoroughly flushed with

from 1 to 3 cc of heptylresorcinol solution S T 37 c metaplen, in a dilution of 1:1,000. If the eye is hard a posterior sclerotomy is done to relieve the tension and give greater depth to the anterior chamber. The insertion of a suture in the superior rectus muscle helps to maintain fixation of the eye. It should be used when the patient is unable to rotate or hold the eye steady. A horizontal incision 1.5 cm long is made in the conjunctiva 10 mm above the limbus. A thick flap (fig 1a), which includes the conjunctiva and the subconjunctival tissue, is dissected to the limbus with scissors. A small scalpel is used to separate the fibers of the conjunctiva from the limbus, the cornea is split for from 0.5 to 1 mm (fig 1b). A conjunctival pocket is thus formed so that the incision is made in a clean field. A mattress suture of 000 black silk on a fine, full curve needle is placed in the edges of the conjunctiva, and the large loops are drawn to the side so that they will not be cut by the knife.

The conjunctival flap is held down over the cornea by blunt forceps so as to obtain fixation of the globe. A Graefe knife, 15 mm in width with a long slender point, is introduced from 1 to 1.5 mm back of the scleral margin, so as just to enter the anterior chamber, and the counter-puncture is made at a corresponding point opposite. This incision is made as far back as possible. Since the incision is confined to the angle



Fig 3—Stereoscopic photograph of an eye showing round central pupil and separation of the iris from its attachment at the base.

of the anterior chamber, there is no danger of injury to the lens, such as may occur when a keratome is used. The edge of the knife is turned backward so as to make a thick tongue of sclera 3 mm long (fig 1c). The length of the limbal incision is approximately 4 or 5 mm. The wedge of the sclera is removed with curved scissors, as in the Lagrange operation (fig 1d). The conjunctival flap is next held up so that the iris may be distinctly seen. This is grasped at the root with delicate curved iris forceps having teeth on the convex side (Foerster model). The iris is pushed gently toward the center of the pupil, and separation of the root from its attachment to the ciliary body (iridodialysis) follows (fig 1e). The suture is drawn tight and the wound closed (fig 1f). The patient is allowed to sit up in bed, the eye operated on being bandaged. The next morning the eye is gently massaged, this should be repeated daily. Should there be pain, atropine is instilled.

It will be noted that the flap produced (the Husum flap) is the same as that used in extraction of a cataract. It is a true pocket and not merely a wide conjunctival flap as suggested by Holth and Elliot. The angles are not open near the cornea. This provides a large area of thick conjunctiva over the scleral opening, and the incision in the sclera is made in what is practically a sterile field, the possibility of infection thus being avoided. The danger of blocking the

⁴ Hall, R. J. Hydrochlorate of Cocaine. New York M. J. 40: 643 (Dec. 6) 1884.

scleral wound is circumvented by the iridodialysis Henderson⁵ examined microscopically thirty-three eyes after iridectomy. In each eye a tongue of iris remained attached at the ciliary body, the average width being 1.06 mm. In 1873, Bowman recommended tearing instead of cutting the iris in performing a broad iridectomy. Tearing permits a peripheral coloboma well back of the incision. The anatomic arrangement of the tissue at the base of the iris is such

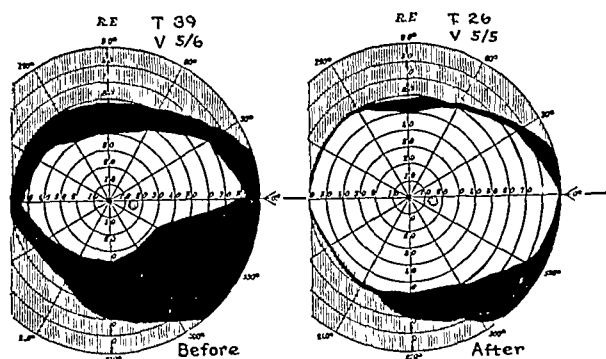


Fig 5—Visual fields taken before and after operation giving the tension and vision

as to cause the rent to occur in the most favorable, i.e., most peripheral, portion of the ciliary zone of the iris. The forceps in the left hand hold the conjunctiva and fix the eye, while the root of the iris is torn with the iris forceps in the right hand. It is easier to tear the iris than it is to pull it out and do an iridectomy.

Possible injury to the lens has been suggested as an objection to this operation. No cataract has resulted in this series and seems a remote complication, as the iris is grasped on the anterior surface and thus protects the lens from any injury from the forceps. In some cases there has been moderate hemorrhage, but not more than follows iridectomy. The hyphema is entirely

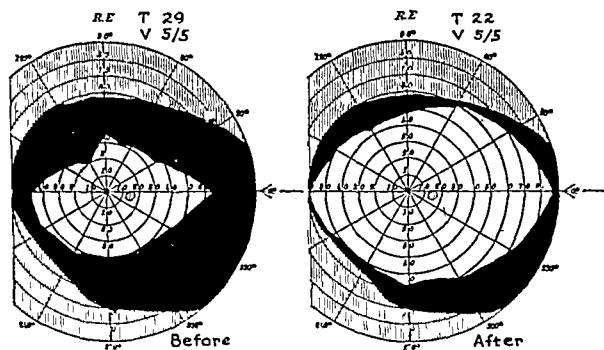


Fig 6—Visual fields taken before and after operation showing the tension and vision

absorbed and causes no complications. The hemorrhage is an advantage rather than a disadvantage, as it acts as local autohemotherapy and tends to prevent infection.

Henderson⁵ stated that Fuchs has called attention to the fact that aseptic wounds of the iris are not followed by the formation of scar tissue. Injury of the iris, in the absence of hemorrhage and infection, shows little or no tendency to scar formation on healing. This is especially true if iridodialysis is performed,

for the iris is completely separated and there are no tags left at the base, as occurs after iridectomy.

SUMMARY

I now have records of twenty-eight eyes on which sclerecto-iridodialysis has been performed. The patients are all private patients, and have been under careful observation for from one to twenty-nine months.

Eight of the cases were in men, and twenty in women. The ages were as follows: from 40 to 50, four cases; from 50 to 60, six; from 60 to 70, twelve; and from 70 to 80, six.

There were five cases of acute inflammatory glaucoma and twenty-three of the chronic type. Among the latter, there were seven blind eyes with absolute glaucoma.

Tension—Following the operation, the pressure was reduced to normal limits in each eye, and has remained

Results in Twenty-Eight Cases *

Case	Age	Eye	Sex	Tension		Vision†		Field	Months Ob served
				Before Opera tion	After Opera tion	Before Opera tion	After Opera tion		
Acute									
A L	65	R	F	90	32	L	5/10	+	23
A L	65	L	F	90	22	L	5/10	+	27
W H	56	R	F	90	32	L	L	+	27
W H	56	L	F	110	37	L	5/22	+	27
H P	68	L	M	75	25	F 1 ft	5/7	+	3
Chronic									
A D	55	R	F	70	25	5/5	5/12	—	7
A D	55	L	F	65	24	5/4	5/6	+	7
A G W	46	R	M	63	19	F 1 ft	5/9	+	29
J N	72	L	F	40	27	5/6	5/5	—	24
G B	69	R	F	49	35	5/5	5/5	—	25
G B	69	L	F	40	40	L	L	+	25
L W	66	R	F	39	22	5/6	5/5	+	25
A G	49	R	M	29	24	5/5	5/4	+	23
A G	49	L	M	80	36	Nil	Nil	+	23
B L	48	L	F	75	25, 35	5/12	5/5	+	22
J S	79	L	F	110	26	5/12—	5/9	+	17
W B	62	R	F	50	32	5/5	5/6	+	12
W B	62	L	F	42	20	5/5	5/6	+	11
O W	70	L	F	52	27	5/7	5/6	+	3
J B	59	R	F	31	22	5/4	5/4	+	2
J B	59	L	F	115	32	L	M	+	2
H M	68	R	M	60	26	L	M	+	2
H M	68	L	M	42	26	5/12	5/12	+	2
J N	75	R	F	48	38	5/7	5/9	—	3
G	75	R	F	70	32	Nil	20/200+	+	6
G	75	L	F	60	34	Nil	Nil	+	6
T W	67	R	M	70	30	Nil	Nil	+	1
T W	67	L	M	42	25	5/5	5/5	+	1

* As of June 1933. The tension was taken with the McLean tonometer.
† Under vision L indicates perception of light F perception of fingers M motion

so during the months of observation. Each patient has been comfortable and free from symptoms.

Fields—Four of the eyes showed slight contraction of the visual field after operation. In the remaining seventeen eyes, there was a definite increase in the size of the field.

Vision—Seven of the eyes were blind, owing to absolute glaucoma. The vision in three eyes was slightly reduced after operation, and in the other seventeen the vision was the same or better.

CONCLUSIONS

The cause of primary glaucoma is not known. The relief of the pressure symptoms by a decompression operation (sclerectomy) and the production of a filtrating cicatrix is based on sound surgical principles.

The pocket-flap of the conjunctiva gives a sterile field for the operation, lessens the danger of immediate and late infection and covers the opening in the sclera with firm protective tissue.

Iridodialysis removes the block of the angle of the anterior chamber better than iridectomy. No iris

remains at the base to cause recurrence (fig 2) There is no dazzle or glare after the operation, for the pupil is small, round and central (fig 3), and as the sphincter is not injured, miotics may be used after the operation

ABSTRACT OF DISCUSSION

DR. WAITER B. LANCASTER, Boston This operation may be classified as a modified Lagrange operation. In my opinion, iridodialysis is an improvement over iridectomy as performed in the original Lagrange operation, with the following reservation. What happens when the iris is atrophic? Does the tear or dialysis always occur at the very base of the iris? Some operators, myself included, have tried to secure good clearance of the angle by using a spatula to separate the synechia before doing the iridectomy or iridodialysis. I did not succeed in devising a satisfactory technique, nor has any one developed a method of doing this which has received wide adoption. Thiel advises a preliminary cyclodialysis.

My feeling has been that an operation on the iris which permanently liberates the angle for 5 mm or more would relieve probably 60 per cent of cases of glaucoma. If unsuccessful, a filtration operation could be performed.

Dr. Spratt makes comparison with iridencleisis. The important basal fact concerning iridencleisis is that the presence of iris in the scleral incision greatly favors filtration. However,

fistula ends in part under the split and very thin layer of cornea, which more easily makes a thin-walled, bulging bleb.

I see no need or advantage in Dr. Greenwood's technique of inserting the conjunctival sutures until the end of the operation. They are in the way. I see no advantage and some disadvantage in inserting the Graefe knife down and in, and then changing its direction to horizontal and making a counter-puncture. It is easier to start with the blade horizontal for both puncture and counter-puncture. The size of the interior

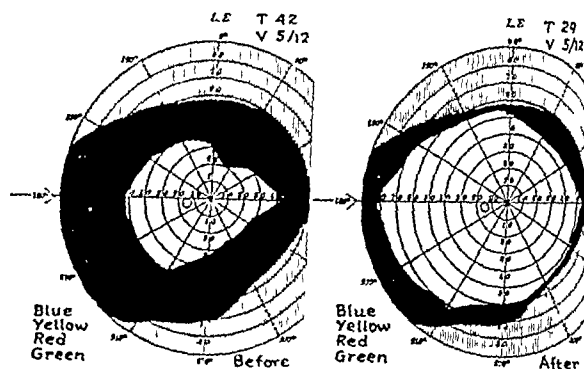


Fig 8—Visual fields taken before and after operation, giving the tension and vision

opening is the important thing. The size of the exterior opening is unimportant.

DR. VIRGIL J. SCHWARTZ, Minneapolis The fact that so many operative procedures have been proposed for the relief of glaucoma, not only varying in manner of execution but diametrically opposed in basic principle, is sufficient evidence that not one of them has thus far been found to be uniformly satisfactory. Moreover, it is possible that until the fundamental cause of glaucoma in its various forms is discovered, there will be no unanimity on this subject. Particularly is this true of so-called chronic simple glaucoma. I have had the opportunity of examining several of Dr. Spratt's patients operated on by the method which he has just outlined, and I have been impressed by the excellence of the results. There are several reasons why this should be so. For one thing, he employs two of the more generally accepted operations together, the Lagrange sclerectomy and iridodialysis. It might be argued that if either of these was entirely successful it

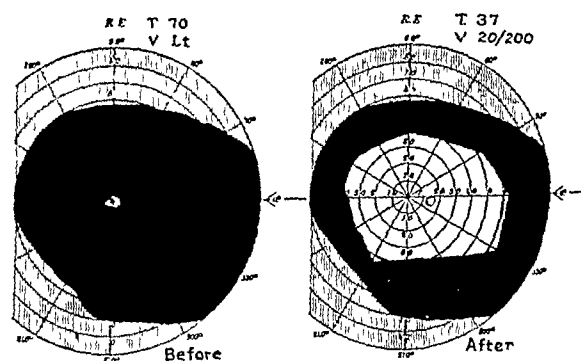


Fig 5—Visual fields taken before and after operation giving tension and vision

should not be necessary to do both. The fact remains, however, that the reduction of tension produced by iridodialysis may not always be permanent so that removal of a piece of sclera is advisable.

Dr. Spratt fortifies his result by using the pocket-flap, which he has been employing in operations for cataract for several years. Moreover, by tearing the iris instead of cutting it, he is fairly certain not to leave a margin of iris tissue at the base, as so often happens with iridectomy. I have asked Dr. Spratt whether there is not some danger of injuring the anterior cap-

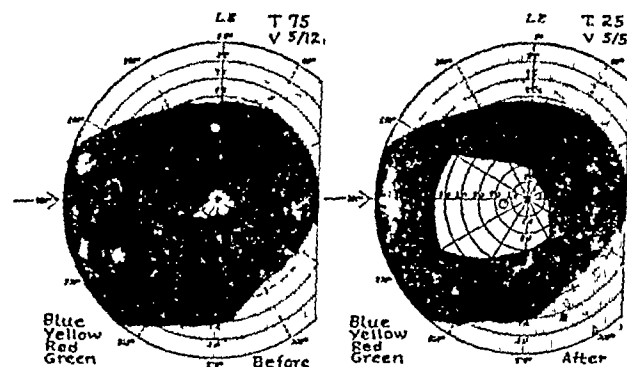


Fig 7—Visual fields taken before and after operation, showing the tension and vision

it makes a great deal of difference how the iris is placed in the scleral incision. The pigment epithelium is the important element. It must not be folded on itself nor incised.

Of the operations described by Dr. Spratt, we have to make our choice among the following: The Lagrange operation, or excision of the lip of the sclera, a modified Lagrange operation, iridencleisis, iridencleisis with excision of the lip—the Lagrange operation plus iridencleisis, iridencleisis with various ways of cutting the iris to prevent it from retracting into the eye. The Elliot operation and the original Holth punch operation may be regarded as modified Lagrange operations.

It is clear that no one of these has such a great advantage over the others as to make it the choice of the majority.

The Elliot operation is easier to perform than most of the others. There is much more likely to be a thin bleb, however. I do not recall seeing any explanation for this, so I offer the following. In Dr. Spratt's technique the conjunctiva is dissected as for the Elliot operation. A horizontal incision is made in the conjunctiva, the ends of which are carefully kept away from the limbus, all of the tissue down to the sclera is removed in a thick flap, the cornea is split, and a piece of sclera is excised—in these respects, there is no difference. Why should there be a thinner bleb after the Elliot operation? It is because during this operation the hole in the eyeball is perpendicular to the surface and includes some of the cornea as well as sclera. During the Lagrange and Spratt operations the hole is oblique, not perpendicular, and so does not include the corner. Thus the split made in the cornea is permitted to close, and the fistula ends farther up under the conjunctiva. Thus forms a good thick bleb much oftener than when the

sule of the lens while tearing the iris away from its attachment, but he assures me that the layer of iris tissue between the forceps and the lens provides a protective cushion which prevents danger to the lens

For those of us who are accustomed to firm fixation of the eye during incision, it would probably be somewhat difficult to rely on the suture through the superior rectus muscle, though the latter would be amply firm. Yet these difficulties can doubtless be surmounted. Many of Dr Spratt's patients with intra-ocular conditions are allowed to sit up within a startlingly short time after operation, often immediately afterward, and to leave the hospital within a few days. This is, of course, because of the firm support of the well sutured conjunctival flap. Dr Spratt's combined operation holds a great deal of promise.

DR CHARLES N SPRATT, Minneapolis. In all of the patients operated on, separation of the iris from the ciliary attachment occurred even when atrophy of the iris was present.

The presence of the thin layer of conjunctiva which follows the trephining operation and which is absent after the Lagrange method can be explained by the fact that the pressure exerted on the tissue from a round opening tends to cause thinning at the center. In contrast, the wound in a Lagrange operation is 3 mm or more long, and the stretching takes place over its entire width.

For many years I did the iris inclusion operation, but abandoned it for two reasons: the bulging areas of conjunctiva and one case of panophthalmitis due to late infection.

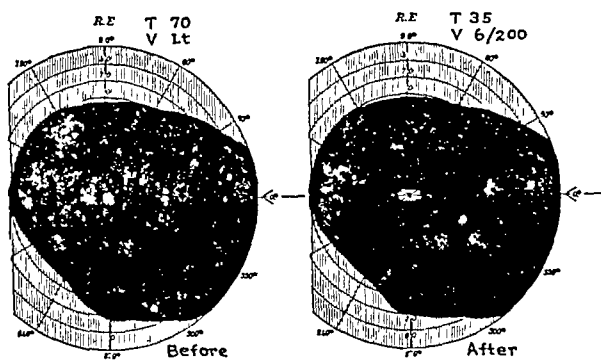


Fig 10—Visual fields taken before and after operation showing the tension and vision

Excellent fixation of the eye is secured by holding the conjunctival flap with blunt forceps. Sharp mouse tooth forceps may cause tearing of the flap. The eye is easily rotated downward by gentle traction. The pull on the conjunctiva is distributed over a wide area of attachment. In addition, I usually place a suture in the superior rectus muscle. It has been suggested that sutures be placed in both lateral rectus muscles.

The insertion of the suture in the conjunctiva previous to scleral incision is of great importance, as it is easily and safely done at the time, and should loss of vitreous threaten immediate closure is possible. It is both dangerous and difficult to place a suture when a prolapse threatens.

No injury to the lens has occurred, as the iris is grasped by the forceps preventing contact of the latter and the lens.

The Most Important Cause of Disease—Fatigue is perhaps the most frequent and most important single cause of disease and under its influence one local manifestation after another often functional but often also organic in nature may develop or there may be a simultaneous appearance of several diseases. Each of these may perhaps be skillfully treated as purely local conditions but when the source of trouble is uncorrected each successful local treatment may be followed by new outbreaks. Those who were fortunate enough to have known Weir Mitchell or are familiar with his contributions will not need to be told that his recognition of fatigue as a cause of disease and his practical system for its correction were his great contribution to medicine—Stengel Alfred. *The Internist* & His Own Psychiatrist. *Ann Int Med* 7:281 (Sept) 1933.

EFFECT OF VACCINATION WITH BCG ON CHILDREN FROM TUBERCULOUS FAMILIES

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AND
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In the April 8, 1933, issue of THE JOURNAL there appeared an interesting article by Chester A Stewart of Minneapolis.¹ The author holds that accidental primary infection with the human tubercle bacillus, even when it does not produce manifest disease, is disadvantageous from the point of view of later endogenous or exogenous tuberculous infection. The allergic stage, according to the article, does not confer immunity but rather increases susceptibility. This point of view, if true, has an important bearing not only on our present attitude toward arrested tuberculous infections but also on the desirability of producing an artificial allergy to tuberculin by means of attenuated vaccines like the BCG vaccine of Calmette. Our aim by this form of attempted immunization is to give to the child who is believed to be not yet infected, or, at least, not seriously so, as shown by a negative reaction to tuberculin, its first tuberculous infection in a safe, well calculated way.

This vaccination depends on a belief exactly the reverse of the thesis of Stewart. We assume that hypersensitiveness to tuberculin and relative immunity to tuberculous infection usually develop together, and also that resistance to reinfection may outlast hypersensitiveness to tuberculin.

We thoroughly agree with Dr Stewart that consumption never develops in persons with a negative reaction to tuberculin without a previous first infection. We also believe that the first infection may be so massive or the child so susceptible that it does not cease in the primary stage but progresses to the secondary or tertiary acute or chronic forms. We are not even surprised that his eighty-four children happened to belong to this group, because sixty-five of the eighty, a total of 81 per cent, had intrafamilial exposure, which naturally renders them a highly endangered and highly selected group. Therefore, we suspect that in his selected eighty-four consumptive children the exposure was usually the determining factor. Our suspicion is borne out by the fact that forty-four of the eighty children who gave positive reactions had the adult type of chronic tuberculosis at the first examination, which means that they are not at all comparable

From the Department of Health.
Read before the Section on Pediatrics at the Eighty Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.
Because of lack of space the article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the authors' reprint.

This study was begun on Dec 15, 1926 and was made possible by the cooperation of the hospitals and clinics of New York City. The clinic facilities for our follow up work were made possible by the children's services of Bellevue, Fifth Avenue, Harlem, Long Island College, Green point, Babies and Sea View Hospitals. The financial support of our study was made by the Metropolitan Life Insurance Co and the Milbank Memorial Fund. Our staff consists of Peter Vogel, MD, and Milton I. Levine, MD, assistant pediatricians; M. Sackett, RN, nurse in-charge; R. Stebbins, RN, and G. Richardson, RN, assistant nurses; Mr. A. Teich, social worker; and R. Weber and M. O'Connor, clerks. Dr. Rustin McIntosh, Dr. Louis I. Dublin, Dr. Bela Schick, and Dr. Emil Bogen helped us by their creative criticisms. Dr. John Caffey read our roentgenograms.

¹ Stewart, Chester A. Does a Primary Tuberculous Infection Afford Adequate Protection Against Consumption? *J A M A* 100:1077 (April 8) 1933.

with those with negative reactions, not only as far as exposure was concerned, but also because they had manifest clinical tuberculosis when selected for study of the effect of primary tuberculosis on them. If one wishes to compare fairly children who react negatively to tuberculin with those who react positively from the point of view of immunity, the two groups must be the same in every other important respect except the reaction to tuberculin. If the age, length of observation and degree and length of exposure of the two groups are the same, they can be evaluated fairly as to the beneficial or the deleterious effect of the primary infection in the face of further exposure.

We observed that among the 224 parenterally vaccinated children there were no deaths from tuberculosis, and that 85 per cent of these children showed at some time a positive reaction to tuberculin, whereas among the 272 orally vaccinated children, among whom the frequency of positive reactors was much more rare, we observed 3 deaths from tuberculosis. However, some of the difference in the death rate can be attributed to the fact that the parenterally vaccinated children were not vaccinated at birth, whereas the BCG vaccine, when fed, had to be given within the first ten days after birth. Therefore, the latter group of children had more chance to become fatally infected. In order to eliminate this difference between the two groups, we now try to administer the BCG vaccine by injection to as many new-born infants coming from tuberculous families as we can find in New York City. If, after equilibrating the age of the two groups of children, the difference in the mortality still persists, we can consider this fact as contradictory evidence to the belief of Stewart.

We have another group of children, study of whom might interest Dr Stewart. Parallel with the children parenterally vaccinated with BCG, we studied a number of unvaccinated controls who had an initially negative reaction to tuberculin and another group who came to us with positive initial Mantoux reactions, all of the groups came from tuberculous families. Most of these children were less than 1 year of age when first tested, however, some of them had passed their third year at the time we had the opportunity to

TABLE 1—Cases with Negative Initial Roentgenograms of the Chest

Positive Initial Mantoux Test			Negative Initial Mantoux Test		
Total Number of Cases	Deaths from Tuberculosis	Deaths from Non tuberculous Conditions	Total Number of Cases	Deaths from Tuberculosis	Deaths from Non tuberculous Conditions
31	1 3.2%	2 6.4%	79	3 3.8%	4 5.0%

perform a Mantoux test on them. The routine dose was 0.2 mg of old tuberculin, given intradermally. The length of the follow-up study of these children varied from one-half to five years. In connection with Dr Stewart's thesis, we studied only those children whose x-ray pictures of the chest showed nothing abnormal at the time or within two months of the time of the first tuberculin test. There is no point in including children who showed roentgenologic evidence of tuberculosis at the first examination or on whom no roentgen examination of the chest was made when they were seen, because we agree with Dr Stewart and others that a too massive initial infection which

produces manifest signs of the disease is a great risk and probably does not confer any appreciable immunity.

We omitted from tables 1 and 2 those children who died of tuberculosis within three months after the initial tuberculin test. We did this in order to be sure that the first tuberculin test was significant and was not done during the negative allergic stage.

As far as the exposure was concerned, we considered it for the positive Mantoux cases from the first tuberculin test onward and for the negative Mantoux test

TABLE 2—Exposure to Tuberculosis

Exposure	Positive Initial Mantoux Test		Negative Initial Mantoux Test	
	Number	Percentage	Number	Percentage
Positive sputum	15	48	41	52
Negative sputum	2	6	24	30
No known exposure	14	44	14	18

* If exposure is considered from the time of the first tuberculin test onward the percentages change to 50 for children exposed to positive sputum 2, for those exposed to negative sputum and 34 for children with no known exposure.

group, from three months prior to the first tuberculin test onward.

As far as the death rate from tuberculosis is concerned, the two groups run almost parallel. This fact suggests that at least in the period immediately following accidental tuberculous primary infection without other evidence of tuberculosis than a positive Mantoux reaction to 0.2 mg of old tuberculin children do not do as badly as Dr Stewart would think. As all the children with positive reactions to tuberculin in our group were very young, they must have had fresh infections, yet they showed about the same death rate from tuberculosis as did those with negative reactions. Therefore, we think that as the tuberculous lesions heal the children will not do worse even later on, whereas those with negative reactions still have to go through their first fresh infection with its attendant risk of early dissemination sometime later. When Dr Stewart claims that primary tuberculous infection is always a benign form of tuberculosis, he seems to overlook the group of children who died of acute forms of tuberculosis, such as tuberculous meningitis and miliary tuberculosis, shortly after the first infection.

We have discussed Dr Stewart's paper at length because we felt that it has great significance for the underlying principles of our immunization of children of tuberculous families with BCG. We shall now discuss our results with vaccination from the points of view of mortality, reactions to tuberculin tests and roentgen findings in the chest.

DIFFERENCE IN MORTALITY FOR CHILDREN VACCINATED WITH BCG AND CONTROL CHILDREN

In order to show the difference between children of tuberculous families after vaccination with BCG and children of tuberculous families without vaccination with BCG, we present two groups for consideration. The first group consists of all the children used as controls who entered our study at birth and all the children whom we vaccinated orally with BCG (table 3). Among the dead babies, only those are included who would be at least 1 year old by June 1, 1933, if alive. Among the living babies, also, credit is given only for completed years.

As is seen from table 3, the children vaccinated with BCG show a lower death rate from tuberculosis than do similar controls. This is true in spite of the fact that we included among the children orally vaccinated with BCG two whose death was caused by a condition of suggestive tuberculous origin, though it was not definitely proved to be so. In all of the cases the exposure to tuberculosis was determined from birth onward. During the first year of life, about one fourth of the children vaccinated with BCG and one third of the controls were exposed to tuberculosis. During later years, however, the exposure was fairly parallel in the

As we had no other facilities to do this, we left the children in the hospitals during the new-born period for one or two months, but we soon found that quite a number of them contracted intercurrent diseases and died shortly after birth of alimentary intoxication, bronchiopneumonia and other conditions. Therefore, we abandoned this method, and we do not hospitalize new-born infants for the sake of separation any more. If we disregard the eleven deaths from nontuberculous conditions among the orally vaccinated children and the two deaths from nontuberculous conditions among the controls, which occurred within 3 months of age in

TABLE 3—Mortality Among Children Orally Vaccinated with BCG and Children Used as Controls, Known Since Birth

Age Months	Type of Case	Total Number			Exposed to Positive Sputum		Exposed to Negative Sputum		No Known Exposure	
		Total	Deaths from Tuber- culosis	Deaths from Non tuberculous Conditions	Total	Deaths from Tuberculosis	Total	Deaths from Tuberculosis	Total	Deaths from Tuberculosis
0-12	BCG	239	2 0.8%	21 8.8%	61	2 3.3%	91		87	
	Control	189	6 3.2%	10 5.2%	54	5 9.2%	90	1 1.1%	45	
12-24	BCG	192		4 2.0%	53		75		64	
	Control	92	1 1.1%	1 1.1%	21	1 4.8%	44		27	
24-36	BCG	164	1 0.6%	1 0.6%	46	1 2.1%	63		65	
	Control	71			16		33		22	
36-48	BCG	133			36		51		46	
	Control	47		1 2.1%	11		22		14	
48-60	BCG	64			11		20		23	
	Control	21			4		10		7	

TABLE 4—Mortality Among Children Parenterally Vaccinated with BCG as Compared with That for Controls with Negative and Those with Positive Initial Mantoux Reactions

Roentgen Findings in Chest	Children Parenterally Vaccinated with BCG			Controls with Positive Initial Mantoux Reactions			Controls with Negative Initial Mantoux Reactions		
	Total Number of Cases	Deaths from Tuber- culosis	Deaths from Non tuberculous Conditions	Total Number of Cases	Deaths from Tuber- culosis	Deaths from Non tuberculous Conditions	Total Number of Cases	Deaths from Tuber- culosis	Deaths from Non tuberculous Conditions
No abnormality	91		2 2.2%	31	1 3.2%	2 6.4%	79	3 3.8%	4 5.0%
Glandular pathologic change	11			6			5		
Parenchymal pathologic change	3			23	2 9.0%		2		1
No roentgenogram	40		3 6.6%	96	2 2.0%		183	1 0.5%	6 3.2%
Total number of cases	150		5 3.3%	150	5 3.2%	2 1.3%	269	4 1.4%	11 4.0%
Exposure to positive sputum	83 55.3%			60 33.0%			107 39.8%		
Exposure to negative sputum	23 17.0%			19 12.0%			72 26.8%		

two groups. All of the deaths from tuberculosis occurred in the exposed groups and within the first three years. It should be remembered that each consecutive year the numbers became less. The mortality from nontuberculous conditions was not lower in the vaccinated group than in the control group, therefore we have no evidence to assume "paraspecific immunity" due to vaccination with BCG as described by Calmette. As a matter of fact there was a greater number of deaths from nontuberculous conditions during the first year among the children orally vaccinated with BCG than among the controls. However we can explain the difference as follows. Calmette advised us to keep the vaccinated children separated from their tuberculous foci for one month after immunization.

the group of hospitalized children, as being due to intercurrent infections contracted in the hospital, then the death rate for nontuberculous conditions in the first year is 4.2 per cent for the orally vaccinated children and also the same for the controls. The similarity of these two figures indicates that our explanation as to the dissimilarity of the death rate for nontuberculous conditions among vaccinated and nonvaccinated children was due to the unequal hospitalization of the two groups during the new-born period.

The other group in which we studied the effect of vaccination with BCG was composed of children whom we did not know at birth, but who had a negative reaction to tuberculin in amounts up to 10 mg when first examined and who received the Calmette

vaccine intradermally or subcutaneously after the initial examination. These children also came from tuberculous families. The mortality among these children was contrasted with that among similar children with negative Mantoux reactions who were not given the vaccine. The second control group to the parenterally vaccinated children consists of infants who, when first examined, were naturally infected, as demonstrated by a positive tuberculin test with or without roentgen evidence of infection (table 4).

As is seen from table 4, the children parenterally vaccinated with BCG did not show any mortality from tuberculosis, whereas the controls with negative Mantoux reactions had a death rate of 14 per cent, against 32 per cent among the children with positive initial Mantoux reactions. If we disregard the children who had initial parenchymal lesions and those for whom no initial roentgenograms of the chest were

we used this group to study the frequency of positive tuberculin tests according to exposure and age. Two hundred and five children vaccinated with BCG and 148 control children were used for this study. The remainder either had not finished their first year or were not tested for allergy. For this study we considered only the Mantoux tests performed with 0.2 mg of old tuberculin, and omitted those negative tests which were done with less than this standard dose and those which were positive with a higher dose. Only children who had finished their first, second, third or fourth year of life were considered.

We have assumed that throughout the period between two negative tests another injection of tuberculin would also have given negative results. A similar assumption has been made with respect to consecutive positive tests. If no test was made at the end of a given year but tests were made before and after this time, we assumed that the reaction at the end of the particular year would, if the test had been made, have been the same as the reactions to tests made before and afterward.

However, this method cannot be used if two dissimilar reactions are obtained. Therefore, we have made special groups of those cases in which the tuberculin test changed from negative to positive and from positive to negative. Our rule for this study, as far as exposure is concerned, has been to put the child in the "no known tuberculous exposure" group for the period before the exposure took place, and in the exposed group from the time of exposure on. In this way our total number of cases fell in one of three categories: (1) not exposed, (2) exposed to a tuberculous member of the household whose sputum was apparently negative and (3) exposed to a member of the family whose sputum was positive. We have also separated the children vaccinated with BCG in each group from the similarly exposed controls (fig. 1).

Because of the small number of cases in each subgroup, the percentages have little statistical significance but are nevertheless of value. As is seen from figure 1, the frequency of positive tests increases with age and with exposure. In each group the vaccinated children gave a higher percentage of positive and changing reactions than did similar controls. However, it was surprising to us to see that even among the controls there were a small number of patients who reacted positively to the same doses of old tuberculin to which they later reacted negatively. Some of these changes undoubtedly were real, some less than 2 cm in diameter, however, might have been pseudoreactions. As we did no control tests, we are unable to distinguish definitely the two types of reactions. Throughout the study we considered a test positive if the erythema or infiltration at the site of injection measured 10 mm or more in diameter when 0.2 mg of old tuberculin was used intradermally. It was interesting to us to learn from this study that only in 20 per cent of the controls did the test become positive within the first year of life, even though all of them were definitely exposed to a member of their family with open tuberculosis. This figure increased by the end of the fourth year to 50 per cent. In each group and at each age the children vaccinated with BCG showed a greater frequency of positive reactions than the controls. However, the difference only varied between 20 and 40 per cent. Therefore, if the development of a positive reaction to

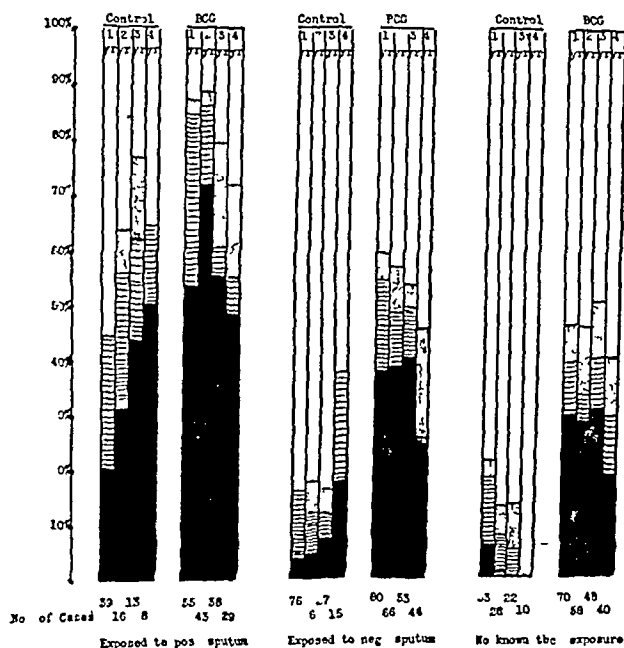


Fig. 1.—Results of Mantoux tests performed on children orally vaccinated with BCG and on control children. All of the children had been known from birth. The dose was 0.2 mg of old tuberculin. The total number of controls was 148, the total number of children vaccinated 205. The solid black areas represent positive Mantoux reactions, the cross-hatched areas a change from a negative to a positive Mantoux reaction, the dotted areas a change from a positive to a negative reaction and white areas negative Mantoux reactions.

made, the mortality from tuberculosis among the children with positive initial Mantoux reactions and that among those with negative reactions would be the same. Roughly, the exposure was the same in the three groups and was considered to affect the parenterally vaccinated children from three months prior to the inoculation, and the controls who had negative initial Mantoux reactions, from three months prior to the first test. On the other hand, the exposure in the group of children who had a positive initial tuberculin test was considered only from the date of the initial positive Mantoux test.

As is seen from tables 3 and 4, the mortality from tuberculosis among children vaccinated with BCG is definitely lower than that for corresponding controls.

RESULTS OF MANTOUX TESTS ON ORALLY VACCINATED AND CONTROL CHILDREN

As only the children known from birth were an unselected group as far as tuberculin tests were concerned,

tuberculin is the necessary indication of a successful vaccination with BCG, only from 20 to 40 per cent of the orally vaccinated children can be considered as effectively vaccinated

Table 5 shows that glandular and parenchymatous pathologic changes occurred more frequently among the controls than among corresponding vaccinated groups. Sometimes before death the roentgenograms of 81 per cent of the infants who died of tuberculosis showed pathologic changes in the parenchyma of the lungs against 8 per cent of those who did not die of tuberculosis. On first thought this roentgen study would seem to indicate that of the children who did not die of tuberculosis, the group vaccinated with BCG showed less morbidity as demonstrated by the x-rays than did corresponding controls. However, we do not think that the difference is significant, because the correlation between pathologic changes in the chest as demonstrated by roentgenograms, and tuberculosis is quite remote. We base this statement on the fact that in twelve, or 16 per cent, of the seventy-three cases in which parenchymal pathologic changes were found, the tuberculin tests were negative at or around the time the roentgenograms were taken. No reason could be found to explain the pulmonary lesions which were demonstrated by roentgenograms. In twenty-eight, or 48 per cent of the fifty-eight cases which showed enlarged hilar or paratracheal shadows, the tuberculin tests were negative at the same time. We are convinced that the reading of the roentgenograms of the chest was correct, however, we have no explanation for the positive roentgen findings. If we consider the tuberculin test a reliable means of diagnosis for tuberculosis, we must admit that the margin of error in the interpretation of roentgenograms of the chests of young children is so great that it is not safe to stress the slight difference between the pathologic changes found in the children vaccinated with BCG and in the controls.

VIRULENCE OF BCG

We shall now consider the virulence of BCG when cultured under special conditions favorable to an increase in virulence. The controversy concerning the possibility of the greatly attenuated BCG culture regaining its original virulence under certain special conditions has been followed by us with great interest and has been the subject of constant investigation. As is well known, Petroff and Sasano and Medlar in this country, Watson in Canada and Dreyer and Vollum in England have stated that it is possible to increase the virulence of the BCG by special methods of cultivation to such an extent that it will produce generalized progressive tuberculosis in guinea-pigs. Because of these results it was claimed that the inoculation of BCG into infants might be dangerous, as the culture might conceivably regain its virulence in the human body as it had in the special mediums. With this in view, we began an investigation which consisted of three main experiments.

1 An attempt was made to detect any appreciable increase in the virulence of BCG under the special methods of cultivation and animal inoculation utilized by those who believed they had seen an increase in virulence.

2 A study was made to determine whether any change in the virulence of BCG developed during residence in the human body for different periods.

3 Observations were made on the development of an increase or a decrease in resistance to tuberculous infection developed in animals after vaccination with BCG.

During the course of these studies it was found that the colonies of BCG on Bordet-Gengou's and on Loewenstein's medium are so characteristic that they can be readily differentiated from those of virulent human and bovine types of tubercle bacilli. Repeated tests showed that these characteristics were constant. Therefore, a study of the colony morphology of BCG was made in all of our subsequent tests in order to follow any changes in the characteristics of the colonies which might correspond to the changes in the virulence of this culture.

A series of experiments was carried out to test the methods recommended by Sasano and Medlar, Dreyer and Vollum and Petroff in an effort to increase the virulence of the bacilli. The BCG was carried through eleven generations on Sasano and Medlar's medium and through five generations on Dreyer and Vollum's

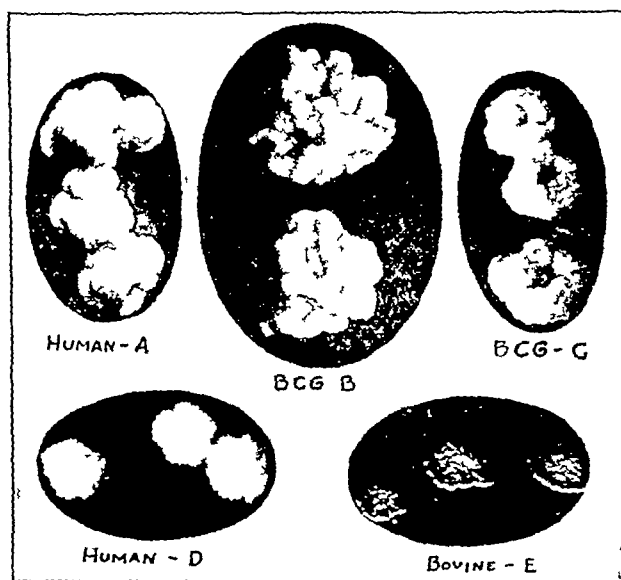


Fig. 2.—Typical colonies of tubercle bacilli after six weeks of incubation at 37°C. A, C, and E show the growth on Bordet-Gengou's medium B and D, that on Loewenstein's medium.

medium. The culture was plated on Bordet-Gengou's and on Loewenstein's mediums, and tests for virulence were made at each transplant to the succeeding generation. Throughout the entire experiment, there was no change from the typical colony morphology.

A large number of rabbits and guinea-pigs were used during this experiment to test the virulence of the culture at each transplant. Some of them died of other infections. Of the sixty-nine rabbits and sixty-seven guinea-pigs that survived, all were negative except one rabbit and one guinea-pig. These two showed a sub-acute fatal generalized tuberculosis. Both of these animals, as well as five other rabbits and five guinea-pigs, were inoculated with the growth from the same bottle. All of the others were free from tuberculosis, although some of them survived as long as from 447 to 479 days. The rabbit in which tuberculosis developed died 340 days after inoculation, and the culture obtained from it was of the bovine type. The guinea-pig died 128 days after inoculation, and the culture obtained was of the human type. The fact that two different types of

tubercle bacilli were obtained from the growth of the same culture would, to a bacteriologist, be sufficient evidence that in at least one and probably in both of the animals it was a cross-infection from other sources

Owing to lack of space, these animals were handled by the same keeper and were kept in the same room with other animals that were inoculated with virulent human and bovine types of tubercle bacilli, and there is no doubt in our minds that cross-infection had taken place. During the past nine months the animals inoculated with BCG have been completely separated from the other animals, and no further progressive infections have developed. Opie has reported similar cross-infections, which have also occurred at the Saranac Laboratory and elsewhere.

The attempt to increase the virulence of BCG by Petroff's method of fishing out colonies from gentian violet egg medium and by rapid passage through guinea-pigs by intratesticular inoculation was also unsuccessful. Among the many guinea-pigs used in these tests, only one developed a mild generalized tuberculosis. But

PATHOLOGIC SPECIMENS FROM AUTOPSIES ON CHILDREN

We obtained pathologic specimens from seven children at autopsy. Five of the children were vaccinated orally during the first week of life, two were vaccinated intradermally and three were unvaccinated children from tuberculous families and served as controls. Table 7, which appears in the reprints, gives the details of these examinations.

The results show that no acid-fast bacilli were found in the organs of three of the infants who died of non-tuberculous infections ten days, thirty-four days and one year, respectively, after vaccination. The colony morphology of the culture that was obtained from the mesenteric glands of the infant who died thirty days after oral vaccination of alimentary intoxication was typically like that of the BCG vaccine strain and was nonvirulent. Human type tubercle bacilli were obtained from two of the infants who died of tuberculosis seven and one-half months and two years and eight months, respectively, after vaccination. Both of these children

TABLE 6—Virulence of BCG in Cold Abscesses from Vaccinated Children. Representative Cases

T G	Aspirated After Vaccination	Smear of Pus	Culture of Pus	Virulence Tests*							
				Guinea Pigs				Rabbits			
				Material Tested	Dose	Period of Incubation	Result	Material Tested	Dose	Period of Incubation	Result
	4 mos	+ few	Typical BCG	Pus		D 4 and 65 days	Negative	Culture	5 mg	D 23 and 477 days	Negative
				Culture	5 mg	K 264 days	Negative	Culture	5 mg		
O L	4 1/4 mos	+ very few	Negative	Pus		K 202 days	Negative				
G C	3 1/2 mos	+ fair number	Typical BCG	Pus		D 36 days	Negative	Culture	5 mg	K 555 days	Negative
				Culture	5 mg	K 306 days	Negative				
						D 44 and 68 days	Negative				
J B	6 mos	+ very few	Typical BCG	Pus		D 71 days	Negative	Culture	5 mg	D 49 days	Negative
	7 1/2 mos	Negative	Negative	Pus		K 106 and 253 days	Negative	Pus		K 184 days	Negative
O M	6 mos	+ very few	Negative	Pus		D 85 and 118 days	Negative				
						K 23 days					

* D indicates that the animal died of other infections. K that it was killed.

since the animals were not segregated at the time, it is more than likely that this case was another one of cross-infection. Most laboratories are now separating the animals infected with BCG from all others. The cultures of BCG are also segregated from all other cultures. Since these precautions have been taken there have been few, if any, reports of increased virulence in BCG cultures.

The question of the possible increase in virulence of BCG after its residence in the human body was investigated. Specimens of pus were obtained from the cold abscesses occasionally developing in children at the point of subcutaneous inoculation with the BCG vaccine. These specimens were cultured on Bordet-Gengou's and Loewenstein's medium, and when growth was obtained it was tested for virulence in rabbits and in guinea-pigs. In some of the cases we obtained more than one specimen of pus. We were able to obtain and study in this manner cultures from six children from three and one-half to six months after vaccination.

All of the cultures were typically like BCG in colony morphology on Bordet-Gengou's and Loewenstein's mediums and showed no increased virulence for rabbits and guinea-pigs.

had whooping cough which in all probability lowered their resistance to infection from a human source. The result of the examination of the last intradermally vaccinated infant who died of pneumonia seven and one-half months after vaccination is incomplete as to animal inoculation, but is negative on smear and culture, and the guinea-pigs are negative to tuberculin after two and one-half months of incubation.

SUMMARY

1 From the results of these investigations it appears that BCG is so attenuated that even under the most favorable conditions of artificial cultivation it is difficult to increase its virulence to any degree. During the past five years, the virulence of the BCG vaccine was tested on 165 rabbits and 194 guinea-pigs, but no evidence was found of any increase in virulence. Twenty cultures of acid-fast bacilli that were recovered from the cold abscesses of seventeen children after from one to six months' stay in the body showed no increase of virulence, but remained like the BCG in colony morphology and were nonvirulent for rabbits and guinea-pigs.

One culture was recovered from the mesentery of an orally vaccinated child six weeks after vaccination.

This culture showed no increased virulence and culturally was typically like BCG

The pathologic material that was obtained from children who were vaccinated with BCG and died of other infections showed no evidence that BCG tended to increase in virulence during its residence in the human body

2 On the basis of our limited experience and on the basis of publications of others, we do not think that slight primary tuberculous infection acquired by natural infection or produced by vaccination diminishes resistance against future superinfections by tuberculosis

3 Children of tuberculous families vaccinated orally with BCG show lower mortality from tuberculosis than corresponding controls

4 None of the parenterally vaccinated children died of tuberculosis, whereas the children who were not vaccinated and were similarly exposed showed about 3 per cent mortality from tuberculosis. There was no appreciable difference in the mortality of the controls who had negative roentgen findings in the chest when they were first seen whether they had negative or positive initial tuberculin tests

5 Tuberculin tests performed on 148 nonvaccinated children followed up since birth and on 205 children orally vaccinated with BCG before their tenth day showed, during the first two years of life, from 20 to 40 per cent more positive Mantoux tests among the latter cases. The allergy produced by BCG apparently does not usually last for more than two or three years

6 Comparatively few of the control children developed positive reactions to tuberculin, even when they were more or less exposed to open tuberculosis, i e, 20 per cent in the first year and 50 per cent up to the fourth year

7 If repeated tuberculin tests are performed through the years, a small percentage of the slightly or moderately positive reactions become negative

ABSTRACT OF DISCUSSION

DR HORTON R CASPARIS, Nashville Tenn. Since the chief specific immunity comes from infection, this particular means was made use of to give the relative degree of immunity that comes from infection. I am glad that the authors mention experimental evidence to the effect that there is a relative degree of immunity that goes with infection, and that they more or less combat the views expressed by Stewart who I think has several loopholes in his argument that children who have been previously infected are more susceptible. In the first place, it is quite impossible to prove that the children in whom pulmonary tuberculosis has developed have not had overwhelming infections. He has no evidence that those children did not have in their past repeated small infections, without symptoms until they were subjected to overwhelming infections. From the practical standpoint one is justified in giving BCG when one is tolerably certain that individuals will be exposed to unknown amounts of virulent human organisms. Physicians in Nashville have had occasion to observe many of about 5000 children who have received BCG but the treatment was given without the elaborate control measures that the authors have described. Of course it will never be definitely known whether or not anything is being obtained from that without the control measures.

DR KARI F KASSOWITZ, Milwaukee. The general adoption of BCG vaccination seems to rest on two essential questions. Can the method be considered not only 100 per cent safe but rather 110 per cent fool proof? Should it replace compete with or rather supplement the methods of social hygiene namely detection of sources of infection and isolation?

On the basis of our limited experience and on the basis of publications of others, we do not think that slight primary tuberculous infection acquired by natural infection or produced by vaccination diminishes resistance against future superinfections by tuberculosis. Children of tuberculous families vaccinated orally with BCG show lower mortality from tuberculosis than corresponding controls. None of the parenterally vaccinated children died of tuberculosis, whereas the children who were not vaccinated and were similarly exposed showed about 3 per cent mortality from tuberculosis. There was no appreciable difference in the mortality of the controls who had negative roentgen findings in the chest when they were first seen whether they had negative or positive initial tuberculin tests. Tuberculin tests performed on 148 nonvaccinated children followed up since birth and on 205 children orally vaccinated with BCG before their tenth day showed, during the first two years of life, from 20 to 40 per cent more positive Mantoux tests among the latter cases. The allergy produced by BCG apparently does not usually last for more than two or three years. Comparatively few of the control children developed positive reactions to tuberculin, even when they were more or less exposed to open tuberculosis, i e, 20 per cent in the first year and 50 per cent up to the fourth year. If repeated tuberculin tests are performed through the years, a small percentage of the slightly or moderately positive reactions become negative.

remains no doubt that the cultures as used by Dr Park and his associates would prove just as harmless in the amount of 10 mg orally and from 0.01 to 0.05 mg parenterally if furnished by him to other physicians of other communities. The question of dosage, the physical condition of the child and the evaluation of the sociomedical factors of exposure, nutrition, and so on require a more judicious handling than other prophylactic procedures. Yet the fact of avirulence of the BCG culture in children, as confirmed by the authors, will eventually make the general use of this method inevitable. The second question is how to coordinate the method of preinfectious vaccination and postvaccinal exposure to infection with the principle of detection and removal of all sources of infection within the reach of a child, as it is being practiced by all public health agencies at the present time, more or less conscientiously and efficiently. I feel that the lesser incidence of tuberculosis in some parts of the country, especially in communities of the Middle West (from 4 to 30 per cent positive tuberculin reactors of the total population in Wisconsin towns) compared with the East, particularly New York and Philadelphia, may account for a greater optimism concerning the possibility of a detubercularized environment. However, exposure to tuberculosis will for some time be an actual danger, because it will not be possible to isolate the potential tuberculosis carriers in the form of sputum-negative, tuberculin-positive reactors. The most desirable object of the vaccination method is to anticipate the primary infection in children of these potential tuberculosis carriers. The artificial rise of resistance against casual superinfection has been borne out sufficiently by the figures of Dr Park and European authors, like Heimbeck. Yet, in case of a constant exposure to a frank, open tuberculosis, the possibility of an overwhelming superinfection after BCG vaccination has not yet been disproved.

DR HENRY J GERSTENBERGER, Cleveland. I wish to ask the authors two questions. Do they consider their work extensive enough to warrant its trial in other communities? Is the difference between 1 per cent and 3 per cent big enough to warrant the immunization with BCG? I understand that the mortality rate in the controls was 3 per cent.

DR J A MYERS, Minneapolis. When a child is infected with tubercle bacilli to the point of producing allergy, foci of tuberculous disease are in his body. Such foci constitute a liability rather than an asset, since they contain cultures of tubercle bacilli which at any moment may be disseminated to other parts of the body. Moreover, allergy is a liability. The first infection type of disease always precedes both acute and chronic reinfection or destructive types. Therefore, the first infection type cannot be regarded as an asset. The records at L. J. Manly, including Stewart's recent report, have shown that the children with the old first infection type of disease have provided nearly all of our consumptives in the teen ages and early twenties. Heimbeck's tuberculin-negative nurses developed the first infection type of tuberculosis, just as most infants and children develop this type when first infected. A few of these girls have already died, as one would expect, from dissemination of bacilli from their primary foci (endogenous reinfection) or exposure to outside sources (exogenous reinfection). Among our students of nursing and medicine who have become infected for the first time through exposure to patients, I have not seen one develop rapidly destructive tuberculosis. Their lesions when demonstrable by tuberculin and roentgen examinations have been of the benign, first infection type. No symptoms appeared except in the occasional case of pleurisy with effusion or erythema nodosum. Two have fallen ill with the reinfection type of disease, many months after the first infection type was demonstrated. If allergy produced by BCG is as dangerous and persistent as that produced by virulent bacilli, one must reap a harvest of tuberculosis among the inoculated group during their teens and twenties just as such a harvest is being reaped among those of this age period who were accidentally infected when they were infants and children. One must not ignore the work of Feldman, Petroff and others who have produced destructive tuberculosis in animals by inoculating cultures prepared from BCG. The remote dangers may also be great. To tide over the age period from birth to three years, when acute reinfection forms of tuberculosis occur the

methods of Grancher, Bernard, Hess and others have proved efficacious. They possess none of the possible dangers of BCG. I admire the scientific and investigative spirit of such workers as Drs. Park and Calmette, but I would feel less apprehensive about the future health of the children of the world if vaccinations with BCG would cease until observation and time tell of the remote outcome of more than 1,000,000 children in Europe, and a smaller number in America who have received this vaccination. The material is sufficiently large, but almost a quarter of a century must pass before definite conclusions are justified.

DR EMIL BOGEN, Olive View, Calif. During the past month I had the opportunity to examine carefully the work of the New York investigation, and I can testify to the great care and precautions taken against errors. They have elaborate data on the 1,000 children that have been followed during the past five years. In interpretation of the data, though, there are many pitfalls. It appears that the danger of BCG becoming virulent is practically nil. On the other hand, there is a possible danger of inoculating a child already infected with tuberculosis but not yet recognized as such with tuberculin or bacillus, as BCG contains tuberculin. There have been a few cases suggesting that in such cases BCG may do harm. Animal experiments have been cited to show that BCG gives protection, but the protection given has been practically uniform against subcutaneous infection. There has not yet been sufficient evidence that the protection would be exerted against a respiratory infection in animals. Calmette, as Dr. Park stated, believes in a specific immunity, that BCG gives children better health. The New York investigation indicates that, if anything, it has a deleterious effect on general health. I have found in practical clinical experience that the tuberculin test is a very valuable guide in the diagnosis of tuberculosis in infancy, just as in veterinary practice the tuberculin test is a very valuable guide for detecting the presence of tuberculosis in cattle. It may still be questioned whether it is worth while losing the diagnostic value of a tuberculin test by vaccinating the infants against the disease.

DR WILLIAM H. PARK, New York. It seems to me that in his discussion Dr. Myers forgets that among the children who developed an infection during the first few months of life a certain percentage die from acute disseminated tuberculosis. In New York City at present we know from our vital statistics that the number of deaths from this cause is at least 40 in infants under 1 year of age. I think Dr. Myers misunderstands the position of those who believe that an arrested infection is under certain conditions a protection. We believe that an arrested infection is a possible danger and therefore of no advantage to a child who is not to be exposed but that it is a protection against further infection, so that on the whole it is advantageous for a child who is to be repeatedly infected. Our hope is that the BCG gives the protection without any possibility of the vaccine itself causing actual tuberculosis. As "consumption" is always a tertiary stage there must of course be a primary focus before clinical pulmonary tuberculosis develops, but as probably 80 per cent of us in this audience have a positive Mantoux test, we certainly hope that only few of us will ever develop pulmonary tuberculosis. As to whether I think we have had sufficient experience to make it wise to advocate the general use of BCG, I believe it is safe and I think the evidence suggests strongly that it gives some protection. I advocate it for infants and older children who have a negative Mantoux test and are to be exposed to infection, if the conditions insure the careful preparation and administration of the vaccine. Probably it is wise to use the vaccine at the present time only as Milwaukee is doing, in certain selected groups, so that its practical value may be decided later. Statistically, the New York City results are not conclusive because they deal with comparatively small numbers of both vaccinated and not vaccinated children. The members of the tuberculous families are instructed as to the precautions necessary to protect their children, whether they are BCG cases or controls. Partly because of this advice surprisingly few of the exposed unvaccinated children die and therefore the difference in the death rate is not as great as it would probably be if no advice were given. I want to acknowledge the great value we

obtained from Dr. Bogen's visit. We hope he will come back next winter. We needed a critical survey of our work by somebody of his type, who combined knowledge of tuberculosis with a knowledge of statistics and mathematics. We agree with him that the hospitalization of infants to prevent infection is usually unwise because it probably causes the death of more babies from nontuberculous infections than it saves from deaths from tuberculous infections. As far as I see, vaccination with BCG does not influence the death rate from other infections than tuberculosis. We think that in only giving the vaccine to exposed children who show no positive reaction to the Mantoux test, we avoid the risk of injuring any from the BCG vaccination. We certainly have never noted any harm from it. I entirely agree with all that Dr. Kassowitz said.

RESULTS OF SURGERY IN SPINA BIFIDA

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SIoux CITY, IOWA

According to the literature the operative mortality in spina bifida is extremely high. In 1905, Moore¹ reported a mortality of 50 per cent, computed from a study of reports of treatment of some 378 cases. Twenty years later, Cutler² stated that this mortality was at least as high as 60 per cent, basing his conclusions on a study of sixty-five cases from the Children's Hospital in Boston. In 1929, the experience of the Mayo Clinic showed a mortality of about 50 per cent if operation is carried out at a young age.³ There is little wonder that with these figures at hand, the general practitioner and the obstetrician who are the first to come in contact with these cases, hesitate to recommend early surgical treatment, notwithstanding the fact that, if not operated on, the largest majority of these infants die within the first year of life.

My experience is at variance with these reports in the literature. Drawing my conclusions from a study of seventy-nine cases of spina bifida that were under my care during the last four years, I propose to demonstrate that with a proper surgical technique and management the mortality may be greatly reduced and that the ultimate prognosis of patients operated on is most favorable.

Studies of operative results in spina bifida commonly fail to distinguish between the results obtained separately in the several varieties of this condition. Spina bifida is a congenital defect and is a result of a malformation of the vertebral arches during the first ten weeks of fetal life, naturally, this malformation may be present in various stages. Clinically it is not important to dwell on the numerous stages that present themselves for consideration. Of interest to the clinician is a discussion of the three main varieties of this disease. The first is the meningocele, a protrusion of the dura through a local defect in the closure of the vertebral arch, the sac being filled with cerebrospinal fluid. When the dual sac contains nerve roots or even the spinal cord itself, which are frequently attached to the sac, it is called myelomeningocele or encephalomeningo-

This article is abbreviated in THE JOURNAL by the omission of the illustrations. The complete article appears in the author's reprints.

Read before the Section on Surgery, General and Abdominal at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Moore J. E. Spina Bifida with a Report of Three Hundred and Eighty-Five Cases Treated by Excision Surg. Gynec. & Obst. 1: 137, 1905.

² Cutler G. D. End Results in Sixty Two Cases of Spina Bifida and Cephalocele Arch. Neurol. & Psychiat. 12: 149 (Aug.) 1924.

³ Craig W. M. Spina Bifida. Preoperative Surgical and Postoperative Treatment S. Clin. North America 9: 219 (Feb.) 1929.

cele, depending on whether it is situated in the spine or in the cranial region. Finally, when the case presents a splitting or an unfinished closure of a large portion of the vertebral column, it is a rachischisis. While in meningocele the overlying skin is more or less normal in its appearance, the skin overlying the second group is parchment-like thin, frequently broken and occasionally with a sinus draining cerebrospinal fluid. In rachischisis there may be complete absence of any dermal covering, the defect presenting an extensive excavation.

The location in the seventy-nine cases of this study was as follows: occipital, one; occipitocervical, two; cervical, six; dorsal, nine; lumbar, thirty-eight; sacral, sixteen; multiple, three; and cases with a wide splitting of the vertebral column in the lumbosacral region, four. In all there were twenty-six instances of myelomeningocele, forty-four of meningocele, two of occult anterior spina bifida in the sacral region with a myelomeningocele, three of encephalomeningocele, one of these with an additional myelomeningocele in the lumbar region, one of an occult anterior spina bifida in the lumbar region with a myelomeningocele, four of rachischisis, and one of dorsal myelomeningocele with an additional occult sacral spina bifida (fig 1).

Surgical repair was done in sixty cases. The untreated group consisted of four cases of rachischisis, seven cases of myelomeningocele covered with an ulcerated parchment-like membrane with sinuses draining cerebrospinal fluid, three cases of meningocele with a well developed hydrocephalus, and five cases in which operation was refused by the parents. The age at operation of the sixty children ranged between 2 days and $3\frac{1}{2}$ years. Thirty-two children were less than 1 month old, fourteen were between the ages of 1 and 2 months, three between the ages of 2 and 4 months, four between the ages of 4 and 6 months, two between 6 and 9 months, one between 9 and 12 months, two between 1 and 2 years, one $2\frac{1}{2}$ years old, and one $3\frac{1}{2}$ years old.

There were a number of complications in the operated group. A complete or partial paralysis of both legs and of both sphincters was seen in four cases, paralysis of one leg was seen in two cases, paralysis of the urinary sphincter without involvement of the legs was seen in three cases, all with a sacral location of the defect. Complete paralysis of both arms with weakness of both legs was present in a child with a cervical myelomeningocele. Evidence of an incipient hydrocephalus prior to operation was observed in nine cases. In a child aged 1 year, with a lumbar spina bifida, paralysis of the urinary sphincter appeared at the age of 9 months. In one child with a lumbar myelomeningocele, a total paraplegia developed following repeated injections of tincture of iodine into the sac. This "treatment" was kept up for over a year, after which time the child was brought to me.

In all three infants with myelomeningocele died following the operation. This makes a mortality of 14.2 per cent for this clinical variety. The mortality for the entire group being only 5 per cent. The cause of death was infection in all three cases. In two of these, before the child died, hydrocephalus was fully developed. A well marked hydrocephalus was present at the time of the operation in both of these cases, and the wound broke open on the third and the fifth postoperative day. In two of the fatal cases the skin covering the defect was badly ulcerated and infected at the time of operation.

A follow-up of the remaining fifty-seven operative cases shows that one child died of a hydrocephalus eight weeks after the operation and two died of intercurrent diseases three and seven months after the operation, respectively. Eight children were not heard from and the remaining forty-six patients are in a good physical condition. The postoperative periods range between 1 month and 4 years, thirty-seven children were operated on over nine months ago.

OPERATIVE TECHNIC

I am always anxious not to alter the infant's routine before and immediately after the operation. This seems to be most important in very young infants. No change is made in the time of nursing, and weaning the infant from the breast is never made before or soon after the operation.

The anesthesia of choice is chloroform for children during their first year of life, if properly given, it is possible to carry the child smoothly on a surprisingly small amount. Thus is avoided the abundant bronchial secretion and the postoperative profuse perspiration that is seen after ether is used. It is important not to raise the child's head during or soon after the anesthesia.

The infant is placed on the operating table in the prone position with the head at a lower level than the defect. Both legs are abducted, a loop of heavy muslin bandage is placed around the ankles and the bandages are pinned down to the mattress covering the table. The chest, abdomen and both legs are wrapped in warm cotton to prevent loss of body heat during the operation. The operative field is painted with half strength of tincture of iodine and then washed for several minutes with alcohol sponges. At this stage, the anesthesia commences. Towels are attached to the surrounding skin by means of a few stitches of silk. If the summit of the skin covering the spina bifida is ulcerated, it is repainted with full strength of tincture of iodine and covered with an alcohol sponge, which is left until the ulcerated area is freed and removed. This portion of the skin is considered infected and contact with it is avoided at all costs.

The incision is placed in such a way as to save all the available good skin. The skin is dissected away from the underlying sac. To make this dissection easier, additional longitudinal incisions are made. Gradually one approaches the base of the sac, which usually is quite deeply situated. A number of large veins may be encountered there, and all the blood vessels must be clamped before they are divided. It is remarkable how poorly these infants stand loss of blood, a tablespoonful of blood is about all that such an infant will safely stand. When the sac is freed from the surrounding structures it is opened at the summit and carefully inspected. Should the spinal cord and nerve roots be attached to the sac, it is important to mobilize them, since with the further growth of the child and with the migration of the spinal cord upward there may develop a pull on the anchored roots that will result in paralysis.

I had to reoperate on a child six months after the first operation because of a beginning cord bladder. The filum terminale was found adherent to the dura and was under high tension. At the first operation the filum was not disturbed, for it was densely adherent to the sac (fig 2).

The summit which is the thinnest portion of the sac, is resected and the sac closed with closely placed interrupted sutures. I never attempt to return the closed sac to the spinal canal, usually this is impossible to accomplish without pressure on the spinal cord, while in myelomeningocele the spinal canal frequently presents merely a shallow excavation. I now aim to construct a roof over the sac, often this is easily accomplished by means of turning down flaps taken from the deep fascia. The attachment of these fascial flaps to the bony structures bordering the defect is left undisturbed. The flaps are joined without the slightest tension by means of interrupted sutures. I never insist on drawing the erector spinae muscles together over the defect, since this is usually impossible without undue tension.

In cases with extremely wide defects it is not possible to use the deep fascia for a plastic repair, in these I take an additional row of sutures of the sac, invaginating the first row. This, I believe, is preferable to a free fascial transplant. A fascial transplant, autogenous or otherwise, is notoriously unreliable in infants, it frequently sloughs and then serves as a medium for an infection. Besides, securing the transplant greatly complicates the surgical procedure. Whenever no fascial plastic operation is possible, I depend on a full thickness of the skin as the only cover. This may require shifting skin flaps, since the skin which originally covered the defect is thin and unsuitable for this purpose. In seven cases of myelomeningocele in which such a repair was made, the ultimate result was good, the original defect, which could be palpated beneath the skin for some time, decreased in size with the growth of the child.

At first I used silk sutures throughout, now I prefer catgut 000 chromic twenty days for all buried sutures, while for the skin I use interrupted sutures of size A silk in fine millinery needles. Buried silk sutures may harbor mild infections for long periods, in two cases, an abscess developed about silk sutures many months after the operation. The skin sutures are removed in forty-eight hours. In the lumbar and sacral regions, the dressing is sealed off from the buttocks. This is best accomplished by protecting the bottom of the dressing with waxed paper sealed to the skin with adhesive tape. The child is removed from the operating table in the prone position with the head lower than the body and is left in this position for the rest of the day. Beginning with the second postoperative day the child may be turned on its side and back. The erect position is not resumed for the first six days. If the temperature remains elevated, the child is kept in the horizontal position even longer. If the suture line becomes red and commences to bulge I immediately aspirate the closed sac, inserting the needle through a point lateral to the incision. Such an aspiration repeated for several days may prevent a threatening sinus formation. However, a bulging of the repaired area is evidence of a mild infection or poor hemostasis, in either case the surgeon must be on his guard to prevent the formation of a sinus. Once a sinus forms, it is important to do everything possible to close it, otherwise it may serve as a portal of entry for infection. Closure of a sinus is frequently accomplished by placing an additional suture through the skin. If drainage of the operative wound is indicated, I place a skin suture, which is left untied until the small rubber tissue drain is removed.

COMMENT

Since the introduction of the classic amputation of the sac in spina bifida, the high operative mortality has been variously ascribed to one or another angle of the operative treatment. Although in the literature the leading causes of death are, in the order of importance, (1) operative shock, (2) infection and meningitis and (3) hydrocephalus, the idea in vogue is that the amputation of the sac is the cause of death through the precipitation of a hydrocephalus. Maintaining that the sac plays an all important role in the absorption of cerebrospinal fluid, Penfield and Cone⁴ recently proposed the operation which is based on a preservation of the entire sac. While there can be no doubt that a hydrocephalus occasionally develops in the wake of a repair of a spina bifida, there is no proof that the amputation of the sac is the cause of it. Experience has shown that whenever the absorption of cerebrospinal fluid is impaired and is barely sufficient to maintain the equilibrium between the production and absorption of the fluid a rapid release of the pressure under which the latter is being absorbed will disturb this equilibrium and precipitate a hydrocephalus. In a patient with a brain tumor with a block of the aqueduct or of the foramen of Monro, tapping of the obstructed portion of the ventricular system will cause a more rapid production of cerebrospinal fluid in it. Aspiration of the sac of the spina bifida leads to an increase in the size of the sac, repeated aspirations will then be required to keep the sac down to its original size.

In fatal cases of spina bifida in which operation has been performed, the hydrocephalus is frequently a terminal condition. It would be of interest to know how many of the children who died with a hydrocephalus following repair were free from a postoperative infection. Even a mild postoperative meningeal infection of a spina bifida may lead to a precipitation of a hydrocephalus. If the sac in spina bifida is an indispensable compensatory organ for the absorption of cerebrospinal fluid, then why are many cases of spina bifida cured by the classic amputation of the sac? The retention of a large portion of the sac during repair is preferred not for its suggested absorptive power but for the fact that it makes feasible less sacrifice and disturbance of the nerve roots attached to the sac. It is also important because the closure of the sac may be done more satisfactorily and with less tension, this in its turn will prevent a leak, an infection and a hydrocephalus.

In the selection of cases for operation it had long been considered that a wide skin defect, as one sees in myelomeningocele with a broad base, is a definite contraindication to surgery. Experience has shown otherwise, plastic repair of the fascia as well as of the skin is successful even in young infants. The prerequisite is prevention of loss of blood. Skin flaps are best taken from above and below the defect rather than from the sides, shifting flaps from the sides may endanger the child's respiration and, besides, the flaps may be disturbed during the child's crying. In two cases of myelomeningocele, repair was carried out in two stages. In the first stage the sac was taken care of and the wide skin defect repaired, four weeks later, the deep fascia was used for the construction of a tent for a better protection of the bulging dura.

⁴ Penfield, Wilder and Cone, William. Spina Bifida and Cranium Bifidum. J. A. M. A. 98: 454 (Feb. 6) 1932.

Paralysis was a leading symptom in eleven instances. One of these cases ended fatally and, with another exception, the child in whom a paraplegia developed following repeated injections elsewhere of tincture of iodine into the sac, the remaining nine patients were either entirely well following the operation or regained function of the paralyzed extremities to a marked degree. This proves the fallacy of the opinion that paralysis is a contraindication to surgery. It seems that paralysis at birth is only a social contraindication to operation, not a surgical one, and the parents' decision to save the child's life even though the child may remain a cripple for life is the one to abide by. Paralysis of the lower extremities or of the bladder, which comes on several months after birth, in the presence of an occult spina bifida or after a repair of a spina bifida is a definite indication for operation, since such a paralysis will readily respond to surgery.

The results that may be achieved with a repair of a spina bifida in a paralyzed child are illustrated by the following example.

CASE 7 (fig 3).—A girl at birth presented an occipital encephalomeningocele and a lumbar myelomeningocele. The occipital protrusion was about one-half the size of the infant's head. The lumbar swelling was the size of the child's fist. When the child was referred to me for treatment, at the age of 4 months, the skin over the occipital protrusion was greatly thinned out and under high tension, the skin over the lumbar swelling, although thinned out, was in good condition. There was some weak movement in the right lower extremity, the left lower extremity was completely paralyzed. The rectal sphincter was dilated and urine dribbled freely from the urethra whenever the child cried. The fontanel was tense and about twice the normal size. The neck was rigid, and slight pressure on the occipital protrusion would cause tonic spasms.

The operation was carried out in two stages. During the first stage, the occipital defect was dealt with. Within the sac, I found the cerebellum which was extremely small. Between the lower poles of the cerebellar lobes the choroid plexus could be distinguished. After ligation and removal of the plexus, the small cerebellum was returned into the cranial cavity. The sac was utilized for the closure of the defect with mattress sutures. Three weeks later, the lumbar defect was taken care of.

The postoperative course was stormy, especially after the repair of the occipital defect. A leak developed which however closed spontaneously ten days later. It is over four years now since the child was operated on. Although her mental development is somewhat retarded, physically she presents a nearly normal child. Her left leg is still somewhat weaker than normal, however she runs and plays without any support.

The time of operation in spina bifida has always been a disputable point. Frazier⁵ is of the opinion that it is best to wait in most cases until the end of the first year of life, this, notwithstanding the fact that his enormous experience has shown that at least 80 per cent of the children die within the first year if untreated. Spectacular cases of operative treatment a few hours after birth are reported, although the wisdom of it is questionable. If the skin is broken and spinal fluid is draining from the sac it is best to wait until the sinus is healed over. This is best accomplished by protecting the wound with a strip of white silk so as not to disturb epithelization when the dressings are changed. If the skin is not broken one should protect it from trauma and wait until the weight lost by the child after birth is regained, this usually requires about two weeks. If the skin covering the defect is not thinned out there is no paralysis and the sac does not increase in size, one may

well postpone surgical treatment until the child is about 2 months old.

There is a current opinion that a child with a spina bifida shows a mental backwardness in future life. This is a difficult point to prove, since most studies are limited to comparatively small groups of cases. From a detailed follow-up of the cases reported here, I am inclined to believe that a retardation of the mental development of the child is seen only in cases presenting large defects, if the child is submitted to operation late after birth. It seems that the invalid life of the child during its first months retards its future development. There is nothing, however, in this follow-up to show that the average child with a repaired spina bifida is different mentally from normal children.

SUMMARY AND CONCLUSIONS

A study of seventy-nine cases of spina bifida leads to the following conclusions:

Surgical repair is the only treatment of spina bifida. If not operated on, the largest majority of the children die within the first year of life.

The best time for operation varies according to the condition of the skin covering the defect. If there is no break in the skin of the sac, it is best to wait until the weight lost by the child after birth is regained, if there is an ulceration of the skin, with or without free drainage of cerebrospinal fluid, one should wait until the draining sinus is healed, however, if complete rupture of the sac is imminent, operation should be done forthwith.

A broad base of the spina bifida and a wide defect in the vertebral arches are not contraindications to operation.

Paralysis is not a contraindication to surgical treatment, after freeing of the spinal cord and the nerve roots, the child may regain considerable function in the lower extremities and in the sphincters.

The importance of the absorptive power of the dural sac of the spina bifida for the prevention of a hydrocephalus is overestimated, in cases in which a hydrocephalus has ultimately developed, either there was evidence of a beginning of it prior to the operation or it developed in the wake of a postoperative infection.

The operative mortality in spina bifida is greatly reduced as a result of (1) a prevention of loss of body heat during the operation, (2) a prevention of loss of blood, (3) a prevention of rapid loss of spinal fluid, (4) the use of a brief and light anesthesia and (5) the return of the infant to the preoperative routine of feeding immediately after the operation.

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ABSTRACT OF DISCUSSION

DR W. JAMES GARDNER, Cleveland: Dr Kolodny's excellent series of results in sixty cases of spina bifida leave few controversial points. A 5 per cent mortality in this type of lesion is certainly a very satisfactory record. I have felt that Dr Penfield's contribution to the treatment of spina bifida—that is the preservation of the sac in order to allow the absorptive area to be preserved—is valuable. Certainly my results have improved very much since I have used his method. Dr Kolodny states that he has adopted the principle in part and saves the lowermost part of the sac, which Penfield points out is the most valuable as far as absorption is concerned. The relation of spina bifida to hydrocephalus is a question that has always intrigued me. The two conditions are closely related and are probably caused by the same congenital defect in many instances. It is probable that in a considerable portion of the

⁵ Frazier, C. H. *Surgery of the Spine and Spinal Cord*. New York: D. Appleton & Co. 1918.

cases the hydrocephalus is the cause of the spina bifida though the spina bifida may be the more obvious lesion. In utero there may be a fusion of the pia and arachnoid membranes which will not permit absorption of the spinal fluid, thus causing an increase in intraspinal and intracranial pressure, which in turn will not permit fusion of the spinal processes. This may be a factor in a fair proportion of cases of spina bifida.

DR HARRY E. MOCK, Chicago. Dr Kolodny has presented an excellent discussion of a condition that is looked on too often by many as a hopeless situation. This paper should serve to rekindle the interest of many surgeons, because now there are possibilities of doing something for it. The contraindications to surgery have been rupture of the sac with meningitis and involvement of the neurologic elements to such an extent that the future of the patient, even with operation, may mean a life of suffering. Dr Kolodny speaks of it as a social rather than a surgical complication. Many mention incontinence of the bladder and rectum as a contraindication to surgery. Dr Kolodny's mortality is much lower than any other I have seen reported and possibly the reason for it is that he has taken a completely paralyzed patient and within from two weeks to two months has boldly gone in and operated. Most surgeons have adopted preservation of the sac. It is the boldness of an early attack that has given the author his good results. Most operators recommend waiting a year.

THE SEX DETERMINATION TEST OF DORN AND SUGARMAN

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AND

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This communication proposes to report certain experiments designed at determining the presence of a specific sex hormone in the urine of pregnant women. The experiments were undertaken in an attempt to repeat the work of Dorn and Sugarman,¹ recently reported. These workers found that it was possible to predict correctly the sex of the unborn child in eighty out of eighty-five cases (94 per cent) following intravenous injection of the urine of pregnant women into immature male rabbits. Their predictions were based on the fact that the urine of women who bore female

TABLE 1—Sex Determination Test—Distribution of Animals

Age of Animal	Number of Animals	Size of Injecting Dose
Over 120 days	12	10-30 cc
From 90 to 120 days	17	10-30 cc
Under 90 days	6	10 cc

children caused the testicles of the experimental animals to show enlargement and congestion as well as microscopic evidence of increased spermatogenesis. On the other hand, the urine of women who bore male children caused no such testicular change. In their article they infer that the accuracy of their results was enhanced by the use of animals of a constant breed as they had noted variations in response among their animals depending on such factors as breed, climatic conditions and food. They also state that the factor of age is an important one, as the accuracy of their results depended in large measure on the location of the testicle in relation to the scrotum at the time of the test, the position

of which being related in turn to the age of the animal. It would appear from their article that the age limit is a narrow one, the optimum age for suitable results being between the ages of 90 and 120 days.

With these facts in mind, a study was undertaken in an attempt to repeat the results of these workers. At the outset it was proposed to conduct tests using animals of different age groups injected with various volumes of urine besides those of the stated age group receiving a given quantity of urine, as outlined in the original test. This report deals accordingly with the results obtained with thirty-five male rabbits, varying in age from 80 to 180 days and receiving varying amounts of urine obtained from patients during the last two months of pregnancy. The distribution of the animals in the different age groups is seen from table 1.

TYPE OF ANIMAL USED

The same breed of rabbit² was used in the tests. A strain of New Zealand Whites reared under standard conditions and fed on a constant diet was available. The exact date of birth of each animal was known. Following transfer from the rabbitry and during the period of the test, the animals were kept under the same conditions as to diet.

TECHNICAL METHODS

Of the twelve animals in the group over 120 days, seven received intravenously the larger dose of 30 cc of pregnant urine in three divided doses over a period of eight hours, the remaining five receiving 10 cc in a single injection. Of the seventeen animals in the group from 90 to 120 days, three animals received 30 cc in divided doses, the remaining fourteen receiving 10 cc in a single injection. The group under ninety days all received 10 cc injections. The duration of the test was forty-eight hours, the animals being killed by air embolism at the end of this time and examined immediately. The testicles were exposed and their position in the scrotum was noted. Of the total group, only five showed undescended testicles, four of these being in the age group from 90 to 120 days and one in the group under 90 days. The testicles were then examined as to size and the presence of circulatory changes such as congestion and edema. A cross section was made and an opinion expressed as to the sex of the unborn child. Following this portions of the testicle and epididymis were fixed in 10 per cent neutral solution of formaldehyde and microscopic sections made. Throughout the course of this investigation both the gross and the microscopic diagnosis were made independent of any previous knowledge as to the sex.

The main criteria used in the microscopic examinations were (1) increase in the size of the tubules and (2) increase in the number of spermatogonia and spermatocytes lining the tubules. In addition, cell activity was measured in terms of increase in the size of the nuclear structure with associated increase in their staining qualities. These changes were especially noted in the spermatogonia. In some of the experiments an attempt was also made to measure the degree of cell activity from the changes observed in the epithelial lining of the epididymis. This, however, was soon abandoned, as it became readily evident that cell activity in this organ bore no relationship to similar changes in the testicle. The opinion on the gross testicle was recorded and the microscopic examination

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¹ Dorn, J. H. and Sugarman, E. I. A Method for the Prediction of Sex in the Unborn. J. A. M. A. 99: 1659 (Nov. 12) 1932.

² These animals were obtained from the Thompson Rabbitry, Montclair, N. J. to which we are indebted for the data as to their age.

made without any knowledge of the gross observations. This was done for the purpose of determining the degree of agreement between the two sets of observations.

RESULTS

Animals in the Optimum Age Group—An analysis of the results in which animals within the age limit recommended by Dorn and Sugarman (between 3 and 4 months) were used, arranged according to age in table 2, shows complete agreement between the gross and microscopic prediction and the sex in only two cases (patients M H and K P) of the seventeen (11.8 per cent). On the other hand, there was agreement between the gross prediction and the sex in nine cases (52.9 per cent), while the microscopic prediction agreed with the sex in only six cases (35.3 per cent). It is interesting to note that there was agreement between the gross and microscopic predictions in only six cases, and this irrespective of the sex of the child.

In this age group there were four cases in which the testicles were undescended. These all showed evidence of spermatogenesis microscopically, and in one of these the microscopic prediction was correct. These results

TABLE 2—Sex Determination Test—Animals Between 90 and 120 Days

Patient	Sex of Child	Age of Rabbit	Volume of Urine	Gross Prediction	Microscopic Prediction
M K	Female	3-4 months	10 cc	Male	Female
F S	Male	3-4 months	10 cc	Male	Female
M Be	Female	3-4 months	10 cc	Female	Male
M Y	Male	3-4 months	30 cc	Male	Female
L M	Male	3-4 months	30 cc	Female	Male
L P	Female	3-4 months	30 cc	Male	Male
M Bo	Female	112 days	10 cc	Male	Female
M H	Female	113 days	10 cc	Female	Female
K P	Female	115 days	10 cc	Female	Female
J F*	Female	115 days	10 cc	Male	Male
E W	Male	117 days	10 cc	Male	Female
I W	Twin males	91 days	10 cc	Male	Female
M S†	Male	91 days	10 cc	Male	Female
M Fo†	Male	95 days	10 cc	Female	Female
M Fe	Male	99 days	10 cc	Female	Female
M J†	Female	91 days	10 cc	Male	Female
L H†	Male	97 days	10 cc	Male	Female

* The baby was a stillbirth but the fetal heart was heard two hours prior to delivery.

† Animals with undescended testicles were used.

are not in agreement with those of Dorn and Sugarman, who state that spermatogenesis in response to stimulation with the hypothetic sex hormone is not fully developed until the testicles arrive in the scrotum. Furthermore, this group includes one set of twin males in which the testicles showed microscopic evidence of spermatogenesis and, therefore, led to an erroneous prediction. This animal should not strictly be included in the series, as death occurred within thirty-six hours after injection, but the presence of active spermatogenesis at least indicates cell proliferation in response to the injection of the urine. In this connection it is worthy to note that this patient exhibited symptoms of a mild toxemia prior to delivery.

These results with this group of animals would show, then, that no constant relationship exists between the microscopic evidence of spermatogenesis and sex prediction of the female child. They further show that there is no constant relationship between gross evidence of testicular enlargement and congestion on the one hand and microscopic evidence of spermatogenesis on the other.

Animals in the Younger Age Group—An analysis of a smaller group of younger animals according to

table 3, shows complete agreement in the gross and microscopic prediction with the sex in two of the six animals (33⅓ per cent). There was agreement between the gross prediction and the sex in four of the six animals (66⅔ per cent), while the microscopic prediction agreed with the sex in but two of the six cases (33⅓ per cent), these being the same cases in which there was agreement between the gross and microscopic observations. It is interesting to note that in this group only one of the animals showed undescended testicles, so that, for this breed of rabbit at any rate, it appears as if the testicles begin to descend prior to the latter half of the third month. In patient M O, the urine

TABLE 3—Sex Determination Test—Animals Under 90 Days Old

Patient	Sex of Child	Age of Rabbit	Volume of Urine	Gross Prediction	Microscopic Prediction
A W*	Female	81 days	10 cc	Female	Male
L D	Female	81 days	10 cc	Female	Male
M O†	Male	83 days	10 cc	Female	Female
M W	Male	85 days	10 cc	Male	Male
G D	Male	87 days	10 cc	Female	Female
M O	Female	87 days	10 cc	Female	Female

* An animal with undescended testicles was used.

† Stillbirth.

was received for examination two days after delivery of a still-born male child. The testicles in this case showed both gross and microscopic evidences of activity which might well suggest the presence of some spermatogenic factor unassociated with sex.

Animals in the Older Age Group—When one considers the older age group of animals, according to table 4, it is seen that there is total agreement between the gross and the microscopic prediction with the sex

TABLE 4—Sex Determination Test—Animals Over 120 Days Old

Patient	Sex of Child	Volume of Urine	Gross Prediction	Microscopic Prediction
T M	Female	10 cc	Male	Female
I W	Female	10 cc	Male	Female
P F	Male	10 cc	Female	Male
R R	Female	30 cc	Male	Male
E H	Female	30 cc	Male	Female
F S	Male	30 cc	Female	Female
B E	Male	30 cc	Female	Male
P D	Female	30 cc	Female	Female
F T	Male	30 cc	Female	Female
E L	Female	30 cc	Female	Male
M A	Female	10 cc	Female	Male
F S	Male	10 cc	Male	Female

in only one case in twelve (8⅓ per cent). The gross prediction agreed with the sex in four of the twelve cases (33⅓ per cent), while the microscopic prediction was in agreement in five of the twelve cases (41.7 per cent). The percentage of error in prediction in this older age group, especially if based on the microscopic observations, is thus not higher than that seen in the more ideally chosen age groups given previously. Moreover, from table 4 it is seen that six of the twelve animals (50 per cent) showed evidence of spermatogenesis irrespective of any relation between this and the prediction of the sex of the unborn child. This number is actually smaller than that of the ideal age group (from 90 to 120 days), as the latter group showed an incidence of thirteen out of seventeen animals (76.5 per cent) exhibiting active spermatogenesis. This would

suggest that natural spermatogenesis in this older group plays but a small part in leading to any confusion as to sex prediction

COMMENT

From an analysis of the results, it is evident that there is no constant agreement whereby the changes excited in the testicle of the rabbit can be used to predict the sex of the unborn child. It further appears that whatever agreement occurs might be readily explainable on the basis of the law of chance. While the number of animals used is relatively small, there are, nevertheless, certain indications that are difficult to dismiss simply on the basis of chance variations within a small group. Thus from the tables it appears that the chances for correct sex prognostication do not necessarily depend on the age of the individual animal. Similarly, there does not seem to be any relationship between what might be described as the action of the spermatogenic factor in the urine of pregnancy and the position of the testicles in the scrotum, as we were able to induce spermatogenesis in animals whose testicles were still intra-abdominally placed.

These results, while offering no support to the view as to the existence of hormones peculiar to each sex, do nevertheless indicate the presence of some agent in certain urines which leads to testicular activity with resulting spermatogenesis. It is barely possible that this activity means nothing more than a quantitative increase of a normally existing substance in the urine of pregnancy. The finding of this spermatogenic factor in the urine of a woman showing symptoms of a mild toxemia (J. W., table 2) points to the need for further investigation as to a possible relationship between this factor and the various toxic states encountered in pregnancy.

CONCLUSIONS

1 Using a pure bred strain of New Zealand white rabbits, we were unable to confirm the observations of Dorn and Sugarman as to the prediction of sex in the unborn child.

2 The age of the experimental animal and the anatomic location of the testicle at the time of intravenous injection of urine of pregnancy apparently plays no part in the matter of testicular stimulation.

3 There is present in the urine of pregnant women a so-called spermatogenic factor unassociated with the sex of the unborn child.

4 The need exists for a further investigation as to a possible relationship between this spermatogenic factor and toxic states of pregnancy.

480 Herkimer Street

Clinical Science Should Lead—Clinical science should lead the medical sciences of the future as it led in the past. It can do so by waking to full consciousness of its powers and responsibilities. There are many directions in which physiology and animal pathology are fundamental to the study of human pathology. Clinical science, which includes human pathology, is fundamental to the proper pursuit of the healing arts. In this direction it has direct powers of which the remaining medical sciences very rarely become possessed. Because of its immediate and constant bearing on the health of the people, it is the most responsible medical science. But it will be clear that, if it is to take its rightful place in our community, it must acquire full opportunities so that it may be conducted, as are the other sciences, with the freedom of movement essential to vitality, being unhampered by collateral preoccupations and opportunisms. It must be conducted with that rigid adherence to truth that takes no heed of consequences.—Lewis, Thomas. *Clinical Science, Lancet* 2 905 (Oct. 21) 1933.

Clinical Notes, Suggestions and New Instruments

THE GRATEFUL RELIEF OF SCROTAL DROPSY BY THE USE OF A SOUTHEY TUBE

PAUL D. WHITE, M.D. AND JOHN P. MONKS, M.D. Boston

It is well known that in selected cases of intractable and distressing anasarca the insertion of Southey's tubes into the feet and legs may afford much relief and may render more bearable the last few weeks or months of life when there is extensive congestive failure.¹ It is not well known, however, that the most grateful relief of all may be afforded to patients with extensive scrotal edema by the insertion of a Southey tube into the scrotum, as recommended by Southey² himself in 1877. Such a measure is more comfortable and sanitary than incision or simple puncture of the scrotum, since the edema fluid can be easily led off by a small rubber tube into a bottle placed on the floor close to the large chair or the chair bed on which the patient reclines with the head elevated and the legs lowered. As cited in our report on the use of Southey's tubes in 1930, our first patient discharged 1 liter of edema fluid through a tube inserted into the scrotum for a period of twenty-four hours, he lost 15 liters of fluid through other tubes inserted into the legs for twice that length of time.¹ The rapid relief afforded by the withdrawal of the scrotal edema was more striking even than that resulting from the removal of fluid from the legs. This example has been followed in several instances since then. We are herewith reporting one of these cases because of the record amount of fluid removed from the scrotum and because of the striking relief afforded to the patient in spite of the fact that tubes were not inserted in the legs. To give comfort rather than to prolong a miserable existence was the aim sought in this case.

REPORT OF CASE

G. H. M., a physician aged 79 at the time of his death, had always been well and active until at the age of 72 he strained himself lifting a heavy weight and was laid up for a few days with almost constant dull aching in the anterior part of the chest and the upper part of the abdomen. He recovered his usual good health shortly, but a year later he began to notice dyspnea on exertion. This symptom steadily increased in severity, and at the age of 75 there began to appear nocturnal attacks of orthopnea, frequently associated with asthmatic breathing and infrequently attended by hemoptysis. There also began at that time mild to moderate substernal oppression on exertion, quickly subsiding on resting or taking glyceryl trinitrate. His activity was much limited and he got on fairly well with the dyspneic spells becoming more frequent but less severe. At the age of 77 (January, 1931) slight edema of the ankles began.

Examination at this time, Jan. 19, 1931, showed considerable cardiac enlargement (the apex impulse and left border of dullness were in the sixth intercostal space, 10.5 cm. to the left of the midsternal line), poor first heart sound, slight systolic murmur and protodiastolic gallop rhythm at the apex, accentuated pulmonary second sound, slight left hydrothorax, palpable liver edge (at costal margin), and slight soft edema of both ankles. The pulse rate was 85, the heart rhythm was regular, and the blood pressure registered 135 systolic and 85 diastolic. The electrocardiogram showed normal rhythm, rate 90, inversion of the T waves in leads 1 and 2 and slight widening of the QRS waves (slight intraventricular block) in all leads.

During the next two years dropsy gradually developed, held in check at first by digitalis and mild diuretics. As the edema increased, the frequency and severity of the spells of dyspnea and of substernal oppression decreased. In the fall of 1932, about four months before death, the dropsy increased to a distressing degree and began to involve the scrotum as well as the legs. Early in January, 1933, the intractable edema of the scrotum was causing great distress, the scrotum itself had

1 Bland, E. F. and White, P. D. The Use of Mechanical Measures in the Treatment of Obstinate Edema. *J. A. M. A.* 95: 1489 (Nov. 15) 1930.

2 Southey, R. S. Traitement de l'anasarque general par un drainage capillaire. *Compt. rend. Acad. Sci. France* pour l'avancement des sciences 6: 806 1877.

enlarged to the size of a small football (60 cm in circumference) January 10, after procaine hydrochloride anesthesia, a Southey tube was inserted into the anterior dependent portion of the distended scrotum. Immediately a stream of fluid gushed out for a few moments. The rubber tubing was then attached and during the next three and one-half hours 1,200 cc drained off into a bottle. The size of the scrotum shrank to that of a large orange (25 cm in circumference) and the patient experienced overwhelming relief. During the next week the scrotum gradually increased in size again but not to what it was before the first tapping. For a second time the Southey tube was inserted into the subcutaneous scrotal edema. In the next twenty-four hours 2,000 cc of fluid drained off, again affording great relief to the patient. During the last nine days of life there was but little reaccumulation of fluid in the scrotum. Death occurred, January 26, from heart failure.

SUMMARY

An elderly physician with intractable and distressing dropsy of the legs and the scrotum was afforded grateful relief by the withdrawal of 1,200 cc and of 2,000 cc of edema fluid through a Southey tube inserted by us into the scrotum on two successive occasions for periods of three and one-half and of twenty-four hours, respectively.

Massachusetts General Hospital

AN UNUSUAL REMISSION IN POLYCYTHEMIA VERA

ERNEST H. FALCONER, M.D., SAN FRANCISCO

In 1918, Dr. S. H. Hurwitz and I¹ reported a case of polycythemia vera in which the patient remained well more than a year following treatment. After five years, the patient still remaining apparently normal, we began to regard her as a clinical cure. In 1923, over six years having elapsed since termination of treatment, she was thoroughly studied with the idea of reporting her case as a clinical cure. She had remained symptom free, with a normal blood level, from late 1916 to 1923. June 16, 1923, the blood count was: hemoglobin 100 per cent (Newcomer), red blood cells, 5.36 million, white blood cells, 7,400, neutrophils, 74 per cent, eosinophils, 1 per cent, lymphocytes, 20 per cent, monocytes, 5 per cent. About this date a bone marrow biopsy was performed and fatty marrow was found at the site of puncture, the junction of the middle and lower thirds of the right tibia. This finding was against any hyperplasia of the marrow and was evidence, along with the blood count, against any hyperactivity of the erythroblastic portion of the marrow.

In 1927 the patient was again studied and at this time part of her clinical record was included in a published report by Dr. Eugene S. Kilgore.² Dr. Kilgore became interested in this patient when she came to the wards of the University of California Hospital to visit an elderly polycythemic patient under his care. These two people had become acquainted through contact in their work of feather dyeing, suggesting a common etiologic factor for their polycythemia, namely absorption of aniline dyes. Her blood count at the time of this 1927 survey was: hemoglobin 94 per cent, red cells 5.27 million, white cells, 11,600, neutrophils 69 per cent, lymphocytes 24 per cent, monocytes 5 per cent. Dr. Kilgore felt at this time that the patient was apparently cured mainly through cessation of contact with aniline dyes.

However, Aug. 20, 1928, after twelve years of remission she returned complaining of headache, dizziness, and irregular and excessive menstruation. Physical examination revealed cyanosis of the face, lips, gums, and extremities. The spleen was enlarged and the liver palpable. The blood count was: red cells, 6.83 million, hemoglobin (Newcomer) 115 per cent, white cells 8,400. The conclusion was that she was now entering the menopause with activation of a latent polycythemia.

Since this date she has been under continuous observation. Her blood level is readily controlled by venesection by irradi-

ation, or by phenylhydrazine given by mouth. The longest interval without treatment has been about eight months. The clinical course for the past five years has been that of a mild polycythemia with few symptoms, with the following exception: Dec. 29, 1929, the patient was having attacks of pain in the right upper quadrant, radiating straight through to the spine posteriorly. About one hour after the pain came on, she became nauseated. Vomiting relieved the pain. The stomach was very irritable after these attacks; she was unable to eat for two or three days, as food caused vomiting. The eyes became bloodshot, there was a bitter taste in the mouth. Examination revealed marked acrocyanosis and cyanosis of the face, lips, and malar eminences. The spleen was palpable. There was no clubbing of the fingers. The liver edge was palpable 3 cm below the costal margin in the upper right quadrant. The edge was moderately tender. There was slight tenderness on pressure over the right upper quadrant, the cardiac rate was slow, with sounds of good quality, no murmurs were heard. The lungs showed no abnormalities. The patient weighed 159 pounds (72 Kg). The red blood cells numbered 7.10 million, hemoglobin, 110 per cent, white blood cells 9,350, neutrophils, 67 per cent, lymphocytes, 26 per cent, monocytes, 7 per cent, platelets, 640 thousand, reticulated red cells, 14 per cent. On account of the intense pain and increasing frequency of these attacks, the patient was admitted to the Letterman General Hospital. It was thought that her attacks might be due to chronic cholelithiasis. A gastro-intestinal survey, including gallbladder films following the administration of dye, showed a normal gallbladder visualization and no evidence of gallbladder disease. Gallbladder studies were repeated later with the same results. In collaboration with the officer in charge of her case, I checked the clinical and laboratory data at the hospital, finding only a high blood level, palpable liver and spleen. Roentgen studies, blood chemistry and laboratory data, exclusive of blood counts, were negative. She remained in the hospital one month, taking phenylhydrazine hydrochloride by mouth, 0.1 Gm twice daily for ten days. The attacks disappeared and have not since returned.

COMMENT

This remission of eleven years' duration in a case of polycythemia vera must be unusual as I can find no similar instance in the literature. It is of great interest in that it suggests an important defensive mechanism in the hematopoietic system against factors tending to upset its balance. At present the patient is in the twentieth year of her disease. The general physical status is good, there being no evidence of arteriosclerosis. The heart is not enlarged and there is no evidence of cardiovascular disease. The lungs are normal, there is no evidence of emphysema or pulmonary stasis. The blood pressure is 135 systolic, 95 diastolic.

In view of the possible etiologic significance of dye contact during her work as a feather dyer, the history of her contact with this work has been rechecked. She began work as a feather dyer in 1912. Her work at first was to clean dyed feathers. For this purpose she used a solution of oxalic acid. She thinks her face had a bluish color for a year or more before she began work as a feather dyer. She recalls, at this time, her father remarking about her 'high color' and jokingly asking 'Have you been drinking?' She worked steadily at this establishment for two years, then opened a small place of her own in 1914. In 1913 she had occasional headaches, in 1914 was dizzy, she could scarcely walk, and at that time polycythemia was diagnosed. She remained in the feather dyeing work for fourteen years, leaving it finally in 1926. During 1918 she was away from dye contact for one year.

In view of the fact that the patient was still in contact with dyes during nine years when she was in a remission also, as she has shown continuous evidence of the disease since 1928 with no dye contact, it is unlikely that dye intoxication was a major etiologic factor in her disease. It may have accentuated her polycythemia, early in the course of the disease.

There has been an excellent opportunity here to study a patient with polycythemia vera over a period of many years. It furnishes an interesting commentary on the difficulties of determining the etiology, or of assessing the value of therapeutic procedures in this disease.

384 Post Street

From the Department of Medicine, University of California Medical School.

¹ Hurwitz, S. H. and Falconer, E. H. The Value of Roentgen Rays and Benzene in the Treatment of Polycythemia Vera. *J. A. M. A.* 70: 1143 (April 20), 1918.

² Kilgore, E. H. Polycythemia in Feather Dyers. *J. A. M. A.* 80: 342 (July 10), 1922.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS IFECH, Secretary

HALIBUT LIVER OIL—*Oleum Hippoglossi*—A fixed oil obtained from the fresh livers of *Hippoglossus hippoglossus*. It is biologically assayed to contain not less than 32,000 units of vitamin A (U S P X) per gram and not less than 200 units of vitamin D (Steenbock) per gram.

Actions and Uses—The same as those for cod liver oil (See General Article Cod Liver Oil and Cod Liver Oil Preparations, New and Nonofficial Remedies, 1933, p. 270).

Dosage—For infants, 6 to 10 drops (25 to 35 minims) daily, for premature and rapidly growing infants, 15 drops (525 minims) daily. For severe vitamin deficiencies, 20 drops (7 minims) or more may be given at the discretion of the physician. The accepted preparations are marketed with an accompanying dropper designed to deliver a certain number of drops to the minim.

Halibut liver oil is a yellow to brownish yellow, oily liquid. It has a slightly fishy but not rancid odor and a fishy taste. Halibut liver oil is slightly soluble in alcohol but is soluble in ether, chloroform, benzene, carbon disulphide, and ethyl acetate. The specific gravity is from 0.920 to 0.930 at 25° C. The refractive index is from 1.480 to 1.485 at 20° C.

A solution of 1 drop of the oil in 1 cc. of chloroform when shaken with 1 drop of sulphuric acid acquires a blue color changing to violet dark green and finally brown. Treat 5 cc. of oil with 5 cc. of benzene and centrifuge for twenty-five minutes at 25° C. no precipitate forms and a clear solution remains.

Dissolve 2 Gm. of halibut liver oil in 20 cc. of a mixture of equal volumes of alcohol and ether which previously has been neutralized with tenth normal sodium hydroxide using 5 drops of phenolphthalein T. S. as indicator and titrate with tenth normal sodium hydroxide to the production of a pink color which persists for fifteen seconds; not more than 1 cc. of tenth normal sodium hydroxide is required (free acid). The amount of unsaponifiable matter as determined by the method of U S P X page 463 is not less than 7 per cent nor more than 135 per cent (it is solid in appearance). The saponification value as determined by the method of U S P X page 457 is not less than 160 and not more than 180. The iodine value as determined by the method of U S P X page 445 on 0.18 to 0.20 Gm. of sample, accurately weighed is not less than 125 and not more than 155.

Abbott's Haliver Oil, Plain—A brand of halibut liver oil-N N R

Manufactured by the Abbott Laboratories, North Chicago, Ill. U S patent and trademark applied for.

Abbott's haliver oil plain is prepared by extracting the oil of fresh halibut livers with an organic solvent which is later removed by distillation. The oil is refined and assayed biologically to have the potency of halibut liver oil N N R.

Mead's Halibut Liver Oil—A brand of halibut liver oil-N N R

Manufactured by Mead Johnson & Co., Evansville, Ind. No U S patent or trademark.

Mead's halibut liver oil is prepared by warming the livers to coagulation, the extracted oil is filtered, treated with a dilution of alkali and then washed, the entire process being conducted with a substantial exclusion of air. The refined oil is assayed biologically to have the potency of halibut liver oil N N R.

Parke-Davis Haliver Oil, Plain—A brand of halibut liver oil-N N R

Marketed by Parke Davis & Company, Detroit. U S patent and trademark applied for.

Parke-Davis haliver oil plain is separated from halibut livers by extraction of cooked livers with sulphuric ether. The ether is removed by distillation. The oil is refined and assayed biologically to have the vitamin potency of halibut liver oil N N R.

Squibb Stabilized Refined Halibut-Liver Oil—A brand of halibut liver oil-N N R

Manufactured by E. R. Squibb & Sons, New York. No U S patent or trademark. The use of the antioxidant is covered by U S patent 1,745,604 (Feb. 4, 1930, expires 1947).

Squibb stabilized refined halibut liver oil is prepared by extraction from the livers of the halibut. The oil is refined and assayed to have the potency of halibut liver oil N N R. An antioxidant—0.03 per cent of hydroquinone—is added to the finished product as a stabilizing agent.

HALIBUT LIVER OIL WITH VIOSTEROL 250 D—Halibut liver oil to which has been added sufficient viosterol (irradiated ergosterol) to assure a potency of 3,333 vitamin D units (Steenbock) per gram, the halibut liver oil used is adjusted (when necessary) to have a vitamin A potency of not less than 32,000 U S P X units of vitamin A per gram by the addition of fish liver oils from one or more of the species *Gadus morhua*, *Ophiodon elongatus* and *Anoplopoma fimbria*.

Actions and Uses—The same as those for cod liver oil (See General Article, Cod Liver Oil and Cod Liver Oil Preparations, New and Nonofficial Remedies, 1933, p. 270, see also Viosterol, New and Nonofficial Remedies, 1933, p. 427).

Dosage—For infants, 8 to 10 drops (3 to 35 minims) daily, for premature and rapidly growing infants, 15 drops (525 minims) daily, for older children, 15 to 20 drops (525 to 700 minims) daily, for adults, especially nursing and expectant mothers, 20 drops (7 minims) or more daily. The marketed preparation is accompanied by a special dropper designed to deliver a certain number of drops to the minim.

Abbott's Haliver Oil with Viosterol 250-D—A brand of halibut liver oil with viosterol 250-D-N N R

Manufactured by the Abbott Laboratories, North Chicago, Ill. U S patent and trademark applied for. The viosterol used is manufactured under U S patent 1,680,818 (Aug. 14, 1928, expires 1945) by license of the Wisconsin Alumni Research Foundation.

Soluble Gelatin Capsules Abbott's Haliver Oil with Viosterol 250 D—3 minims. Each capsule contains 3 minims of halibut liver oil with viosterol 250 D diluted with 3 minims of vegetable oil.

Abbott's haliver oil with viosterol 250 D is prepared by combining halibut liver oil one or more other fish liver oils and viosterol in such proportions that the finished product will have the potency of halibut liver oil with viosterol 250-D-N N R.

Mead's Halibut Liver Oil with Viosterol 250-D—A brand of halibut liver oil with viosterol 250-D, N N R

Manufactured by Mead Johnson & Co., Evansville, Ind. No U S patent or trademark. The viosterol used is manufactured under U S patent 1,680,818 (Aug. 14, 1928, expires 1945) under license of the Wisconsin Alumni Research Foundation.

Mead's halibut liver oil with viosterol 250 D is prepared by combining refined halibut liver oil one or more other fish liver oils and viosterol in such proportions as to bring the vitamins A and D potency of the finished product to that of halibut liver oil in viosterol 250-D-N N R.

Parke-Davis Haliver Oil with Viosterol 250-D—A brand of halibut liver oil with viosterol 250-D-N N R

Manufactured by Parke Davis & Company, Detroit. U S patent and trademark applied for. The viosterol used is manufactured under U S patent 1,680,818 (Aug. 14, 1928, expires 1945) by license of the Wisconsin Alumni Research Foundation.

Parke-Davis haliver oil with viosterol 250 D is prepared by combining halibut liver oil one or more other fish liver oils and viosterol in such proportions that the finished product will have the vitamins A and D potency of halibut liver oil with viosterol 250-D-N N R.

Squibb Stabilized Refined Halibut-Liver Oil with Viosterol 250 D—A brand of halibut liver oil with viosterol 250-D-N N R

Manufactured by E. R. Squibb & Sons, New York. No U S patent or trademark. The viosterol used is manufactured under U S patent 1,680,818 (Aug. 14, 1928, expires 1945) by license of the Wisconsin Alumni Research Foundation. The use of the antioxidant is covered by U S patent 1,745,604 (Feb. 4, 1930, expires 1947).

Squibb stabilized refined halibut liver oil with viosterol 250 D is prepared by combining halibut liver oil with viosterol in oil in such proportions that the finished product will have the potency of halibut liver oil with viosterol 250-D-N N R. An antioxidant—0.03 per cent of hydroquinone—is added to the finished product as a stabilizing agent.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1933, p. 377)

Lederle Laboratories, Inc., Pearl River, N. Y.

Tuberculin O T (Old Tuberculin)—(See New and Nonofficial Remedies, 1933, p. 379). Also marketed in packages containing 1 cc. of tuberculin.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1933, p. 398)

Hixon Laboratories, Inc., Johnstown, Ohio

Diphtheria Toxin for the Schick Test (Diluted)—A diphtheria toxin prepared by growing diphtheria bacilli in broth, aging and diluting with a solution containing sodium borate 0.36 per cent, boric acid 0.53 per cent and sodium chloride 0.61 per cent. The diluted toxin is of such strength that 0.1 cc. (one dose) given intracutaneously constitutes one-fiftieth minimum lethal dose for a guinea pig of 250 Gm. weight. The product as marketed is ready for use, no diluent being required. Merthiolate 1:10,000 is used as preservative. Marketed in packages containing sufficient material for ten, twenty-five and fifty tests.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary

WHITE HOUSE CAKE 13 EGG (WHITES)
ANGEL FOODWHITE HOUSE CAKE 6 EGG (WHITES)
ANGEL FOOD**Manufacturer**—White House Bakeries, Inc., Boston**Description**—Angel food cakes prepared from egg whites, sucrose, patent flour, cream of tartar, sodium chloride, and vanilla extract**Manufacture**—The egg whites and vanilla extract are mixed, the sugar, salt, cream of tartar and finally the flour are worked in. The batter is scaled through a depositing machine into pans and the cake is baked for forty-five minutes at a temperature of 193 C.

Analysis (submitted by manufacturer) —	per cent
Moisture	28.3
Ash	1.5
Lipoids	0.4
Lipoid phosphoric acid (P O ₅) less than	0.01
Protein (N X 6.25)	6.7
Protein insoluble in water (N X 6.25)	8.9
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	63.0

Calories—3 per gram 85 per ounce**Claims of Manufacturer**—Thirteen egg whites and six egg whites are contained in the respective two sizes of the individual Angel Food Cakes

AUNT JEMIMA PANCAKE FLOUR

Manufacturer—The Quaker Oats Company, Chicago**Description**—A self-rising pancake flour containing wheat, corn, polished rice and rye flours, powdered skim milk, corn sugar, soda, calcium acid phosphate and salt**Manufacture**—The flours are heat processed and bolted. The ingredients are mixed in definite proportions in a batch mixer, bolted and automatically packed in cartons. Each batch is subjected to a baking test.

Analysis (submitted by manufacturer) —	per cent
Moisture	9.9
Ash	5.5
Fat (ether extraction method)	1.3
Protein (N X 6.25)	9.5
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	73.2

Calories—3.4 per gram 97 per ounceHEINZ BREAKFAST WHEAT WITH
CEREAL CELLULOSE**Manufacturer**—H. J. Heinz Company, Pittsburgh**Description**—Mixture of granular durum wheat 'middlings' (semolina), cooked and toasted wheat, rice hull cellulose, sugar and salt**Manufacture**—Soft winter wheat is cleaned by the usual milling operations and is cut into small particles, the flour and fine material formed are removed. Particles of desired size, commercially pure rice cellulose prepared from rice hulls (see announcement for Heinz Rice Flakes Prepared with Pure Rice Cellulose, THE JOURNAL, Aug. 16, 1930, p. 485), and a solution of sugar and salt are mixed and are cooked in a rotary steam pressure cooker until the starch of the wheat is well gelatinized and the cellulose adheres to the cut surfaces of the wheat. The cooked mass is partially dried with hot air and then with cold air, it is rolled into thick flake, toasted in a rotary oven, cooled

ground to a desired fineness mixed with durum wheat middlings (semolina) and packed in cartons

Analysis (submitted by manufacturer) —	per cent
Moisture	7.1
Ash	2.0
Sodium chloride	0.8
Fat (ether extraction method)	0.6
Protein (N X 6.25)	13.0
Reducing sugars as dextrose	0.9
Sucrose	1.6
*Dextrins	5.5
*Soluble starch	26.8
Crude fiber	5.6
Carbohydrates other than crude fiber (by difference)	71.7

*Heinz laboratory method

Calories—3.4 per gram 97 per ounce**Vitamins**—Vitamin assay shows a fair content of vitamin B**Claims of Manufacturer**—The added cereal cellulose promotes laxation by providing indigestible bulk, thereby tending to counteract constipation due to insufficient bulk in the diet.ANITA FLOUR MADE OF CHOICEST
HARD WHEAT (BLEACHED)**Manufacturer**—Texas Star Flour Mills, Galveston, Texas**Description**—Hard winter wheat "long patent" flour, bleached**Manufacture**—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with nitrogen trichloride (one-ninth ounce per 196 pounds) and with a mixture of calcium phosphate and benzoyl peroxide (1 part to 50,000 parts flour).**Claims of Manufacturer**—For general baking in the home.

McCORMICK'S BEE BRAND TURMERIC

Manufacturer—McCormick and Company, Inc., Baltimore**Description**—Ground turmeric (dried rhizome or bulbous root of Cucuma longa L.)**Manufacture**—The rhizomes are dug out of the ground, cleaned of dirt and fibrous roots, dried in the sun, exported in bags, ground, and packed in tins at the packing plant.

Analysis (submitted by manufacturer) —	per cent
Moisture	8.2
Total ash	5.8
Acid insoluble ash	0.1
Volatile ether extract	3.2
Nonvolatile ether extract	7.6
Protein (N X 6.25)	9.6
Starch	32.7
Crude fiber	5.8
Carbohydrates other than crude fiber (by difference)	59.8

Claims of Manufacturer—Conforms to the United States Department of Agriculture standardBLISS PANCAKE CRYSTAL WHITE BRAND
SYRUP(BLEND OF CORN SYRUP AND CANE SUGAR SYRUP
FLAVORED WITH VANILLA)**Manufacturer**—Bliss Syrup and Preserving Company, Kansas City, Mo.**Description**—A table syrup, corn syrup sweetened with sucrose syrup and flavored with vanilla**Manufacture**—Corn syrup is mixed with sucrose syrup (90 per cent corn syrup, 10 per cent sucrose syrup) and flavored with vanilla. The mixture is packed in the usual way (THE JOURNAL, March 5, 1932, p. 817).

Analysis (submitted by manufacturer) —	per cent
Moisture	24.5
Ash	0.2
Fat	trace
Protein (N X 6.25)	trace
Reducing sugars as dextrose	32.1
Reducing sugars as dextrose after invertase inversion	38.0
Sucrose (copper reduction method)	5.7
Dextrins (by difference)	27.5

Calories—3.0 per gram 85 per ounce

Special Articles**THE HEALTH HAZARD OF AMEBIC DYSENTERY**

REPORT OF AN OUTBREAK

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An outbreak of amebic dysentery among employees and guests of several hotels and eating establishments in Chicago became manifest in August. Practically all of the guests were nonresidents of Chicago and as a result the disorder spread to other cities. This preliminary report is being published therefore, to describe the epidemic and the measures instituted to control it. Physicians throughout the country should be on the lookout for cases of the disease.

Authorities¹ state that from 8 to 10 per cent of the population as a whole are infected with *Endamoeba histolytica*. The rate is probably not quite so high in Chicago. However, many of these infected persons do not have symptoms of sufficient severity to indicate that they are infected. While these chronic or carrier patients may not suffer from ill effects, they are a menace to others. This is well borne out by the present outbreak of amebic dysentery.

Until August 1933, one or two cases of amebic dysentery were reported each month in Chicago. This is the usual level, as is demonstrated in table 1, and was no cause for alarm.

TABLE 1—Cases of Amebic Dysentery by Months from January 1930 to Oct. 15, 1933

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1930	1	2	0	0	2	0	1	0	6	12	4	0	26
1931	1	4	0	0	0	1	1	3	1	1	1	1	16
1932	1	2	0	1	2	0	2	2	4	12	0	0	17
1933	0	1	2	0	2	2	12	13	14	22	0	0	

On August 15, two cases were reported, one each by a hospital at which the patients were being treated. These cases were investigated. It was found that both patients had eaten at a certain hotel in Chicago. An investigation was immediately ordered and a staff sent to the hotel for the purpose. Investigations were made of the entire group of food handlers at the hotel and thirteen clinical cases of amebic dysentery were discovered by the end of August.

Control measures were established immediately. These included:

1. The prompt isolation and treatment of all cases and carriers.
2. Stringent sanitation in toilets in regard to washing the hands.
3. The prohibition of food handlers with stools positive for *Endamoeba histolytica* from returning to their work after treatment until they had had three negative specimens of feces taken at intervals of one week.

¹ Johnstone, H. G., David, N. A., and Reed, A. C., A Protozoal Survey of One Thousand Prisoners, *J. A. M. A.* 100: 728 (March 11), 1933.
² Craig, C. F., The Amebiasis Problem, *ibid.* 98: 1615 (May 7), 1932.

The University of Chicago cooperated in carrying out the laboratory work necessary.

Specimens of feces were collected and examined in warm distilled water and stained with iodine. The following technic was employed:

A drop of physiologic solution of sodium chloride and one of iodine stain were placed close together on a slide, but not touching. A round applicator stick or a tooth-pick was smeared with the feces and was rolled in the drop of salt solution and then in the drop of iodine solution. A single cover slip was placed on both drops, half of the material under it being stained and the other half unstained. The unstained portion was first examined for living flagellates and active amebas. In the stained portion the protozoan cysts stood out as bright spheres against the pink background and soon became tinged with the iodine to varying tones of yellow. The nuclei became clearly defined as the iodine penetrated.

The iodine reagent was prepared from a 5 per cent aqueous solution of potassium iodide, saturated with iodine, which was then diluted with an equal amount of distilled water.

Of 364 food handlers from the hotel who were examined up to September 1, fifteen active cases and eleven carriers were found. A preliminary report of this was made, October 9, by Fred O. Tonney, Gerald L. Hoeft and Bertha Kaplan Spector,² before the Laboratory Section of the American Public Health Association in Indianapolis.

As soon as a person was found to be harboring the ameba within his intestinal tract, he was excluded from the hotel.

Later, on October 25, a second examination was made of all the food handlers of the hotels as well as of the non-food handlers. On the second examination, feces were obtained from all of the food handlers previously examined except the twenty-six who had been excluded.

It was found that 60 had *Endamoeba histolytica* in the stools who were negative on the first examination, 498 non-food handlers were examined and 100 were found to have *Endamoeba histolytica* in the stools. In this second laboratory survey, which was extended to include all the employees of the hotels, carriers of the parasite were found by using cultural methods. Of these, 23 were among food handlers and 23 among other employees. These carriers had not been discovered when the only tests made were direct microscopic examinations of the specimens of feces.

A liver infusion agar was used for making the cultures. A pea size lump of feces was added to a slant of the warm liver infusion agar and dilute serum (one part of serum to six parts of sterile physiologic solution of sodium chloride).

The following are the directions for making liver infusion:

1 pound of fat-free ground beef liver, 500 cc of tap water in a covered pail. Put in flowing steam for twenty minutes. Stir. Boil one and one-half hours longer in an Arnold sterilizer, stirring continually. Filter through a wire screen. Sterilize.

From this the liver infusion agar is made as follows: 500 cc of liver infusion, 500 cc of tap water, 20 Gm of washed agar, 10 Gm of peptone, 5 Gm of sodium chloride. Autoclave the foregoing for thirty minutes. Cool to 60°C. Adjust to pH 7.

² Tonney, F. O., Hoeft, G. L., and Spector, Bertha Kaplan. Threat of Amebiasis in the Food Handler, this issue, p. 1638.

Arnoldize for one and one-half hours Tube or put up in flasks Autoclave at 15 pounds for thirty minutes

The cultures are examined for *Endamoeba* after twenty-four and forty-eight hours' incubation at 37 C

Thus far in Chicago there have been 19 deaths from amebic dysentery and 185 cases of the disease and 193 carriers of *Endamoeba histolytica* traced in this outbreak It is impossible to state just how long the infestation had existed among the employees of these hotels

DIFFICULTIES IN CHECKING THE OUTBREAK

Like other infections with protozoa, those with *Endamoeba* produce a variety of symptoms The disorder may be fatal in a short time, it may be severe for a long or a short period The disorder may become chronic with alternating periods of diarrhea and constipation It may be mild and cause little discomfort In addition, the incubation period of the disease varies from nine to ninety-five days

The great majority of the persons patronizing the hotels were not residents of Chicago Frequently, those infected had returned to their homes in some distant city before symptoms became apparent Consequently, it was decided to send a questionnaire to the out-of-town guests of the hotel chiefly concerned The probable date of the outbreak seemed to be about May 1, 1933 Therefore, the questionnaires were sent to all individuals who had registered after that date Of 22,000 questionnaires sent out, approximately 200 were returned because of the wrong address Up to November 14, approximately 3,490 replies had been received

In the questionnaire, information was requested as to any illness occurring during or after a visit to Chicago Of 3,490 questionnaires 180 reported illnesses Of these, 69 were positively diagnosed as amebic dysentery, 23 were reported as suspected of having amebic dysentery, and 88 were reported as having disorders other than amebic dysentery Among the disorders listed were ulcerative colitis, mucous colitis and appendicitis Many of the persons suspected of having an amebic infection had bloody stools and diarrhea All of the individuals had outbreaks of diarrhea eighteen days or more after they had eaten at the hotels or restaurants from which the outbreaks were traced

Table 2 shows the number of cases occurring in various cities in which a diagnosis was definitely made by laboratory methods All of these individuals gave a history of having eaten at the hotels and later developing amebic dysentery

Dr Charles C Lund of Boston writes that six members of a committee which met in Chicago, June 30, developed colitis Four of them died Three of the deaths have been definitely found to be due to *Endamoeba histolytica* infection He adds "Apparently sporadic cases of amebic dysentery fall into the hands of excellent doctors, but doctors who are inexperienced in the diagnosis and treatment of the disorder The diagnoses are mostly missed and many of them have surgical operations which result unfortunately"

Amebic dysentery is the cause of many obscure intestinal disorders Many cases are unrecognized, but these cases act as foci from which the disease is spread throughout the country Physicians having cases of diarrhea in which the cause has not been discovered should have repeated examinations of the stools made It will aid greatly if the Chicago Board of Health is

notified of all positive cases that seem to have emanated from Chicago The board is anxious to cooperate in checking the spread of the disease

A great deal of the spread is undoubtedly due to carriers engaged in food handling These food handlers act as foci from which the disease is spread These foci will remain unrecognized unless routine stool examinations of all food handlers are instituted

All food handlers who have a history of amebiasis should be examined once a month for four months and thereafter every six months for the rest of their lives This is advocated because two of the food handlers discovered to be harboring the ameba in this outbreak were also carriers of ameba in 1927 and were discovered during an outbreak of amebic dysentery in Chicago at that time³ Repeated stool examinations were negative for the ameba for many months in these two persons but the organisms reappeared years later

TABLE 2—Cities From Which Amebic Dysentery Has Been Reported

Cases		Cases	
Atlanta Ga	1	Bogalusa La	1
Chicago	22	Vancouver B C	1
Omaha	1	Wyandotte Mich	1
Paris France	1	Muncie Ind	1
Chattanooga Tenn	2	Des Moines Iowa	1
Waterbury Conn	1	Adrian Mich	1
Detroit	1	Lexington Ky	1
Rochester N Y	1	San Antonio Texas	1
Leavenworth Kan	1	Philadelphia	1
Indianapolis	8	Seattle	1
St Louis	6	Denver	1
Kokomo Ind	1	Bemidji Minn	1
New York	2	Baltimore	1
Danbury Conn	1	Scottville Va	1
Kansas City Mo	4	Cincinnati	1
Nashville Tenn	1	St Paul	1
Dayton Ohio	1	Montclair N J	1
Dallas Texas	2	Decatur Ill	1
Bethlehem Pa	1	Bloomington Ind	1
San Francisco	1	Birmingham Ala	1
Moline Ill	1	Newark N J	1
Hot Springs Va	1	Rodondo Beach Calif	1
Akron Ohio	1	Lafayette Ind	1
Boston	1	Buffalo	1
Oakville Ont	1	Youngstown Ohio	1
Washington D C	2		

To Nov 14 1933

Surveys made in Chicago and areas farther north¹ show that amebic dysentery is not a particularly uncommon disease Williamson and Geiger⁴ reported the examination of 148 persons in 1929, all of whom were food handlers, and found that 27 were carriers of ameba and 2 were actively infected

Between 1921 and 1927 there were thirty-three deaths from amebic dysentery in Chicago S J Lewis⁵ stated that infection with *Endamoeba histolytica* is more prevalent than once thought It is especially common in the southern parts of the United States⁶ The outbreaks of it that occur are in many cases the result of infection transmitted by carriers of *Endamoeba histolytica* who are engaged in food handling

All food handlers should be carefully examined and reexamined and specimens of feces studied for the presence of the parasite From three to six stool examinations should be made on every individual suspected of having amebic dysentery In all cases of diarrhea

³ Kaplan Bertha Williamson C S Geiger J C Amebic Dysentery in Chicago J A M A 88 977 (March 26) 1927

⁴ Williamson C S Kaplan Bertha and Geiger J C A Survey of Amebic Dysentery in Chicago J A M A 92 528 (Feb 16) 1929

⁵ Lewis S J Amebiasis with Special Regard to Its Laboratory Diagnosis Texas State J Med 27 316 (Aug) 1931

⁶ Archer J G The Increasing Incidence of Amebic Dysentery as a Warning for More Thorough Study of Diarrhea New Orleans M & S J 85 418 (Dec) 1912

or chronic intestinal disorders, a careful search of the stools should be made for the presence of *Endamoeba histolytica*. Amebic dysentery is a real health hazard. It demands the attention of health officers.

THE THREAT OF AMEBIASIS IN THE FOOD HANDLER

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In the light of the very disquieting experience here recounted, which is the second of its kind occurring in a large metropolitan center within a few years, one clearly defined fact is apparent—that too little thought has been given to amebiasis as a public health hazard in the United States.

Although several published surveys,¹ have called attention to the growing incidence of infestation with *Endamoeba histolytica* in this country, giving evidence that from 3 to 10 per cent of the populations studied were infested with this parasite, the general impression still prevails that the disease is mostly confined to tropical and subtropical regions and is of little concern in the temperate zones.

However, two recent outbreaks of amebic dysentery in large urban hotels—the last numbering thirty-one clinically active cases and eleven carriers of the encysted parasite at the time of the first examination, with a number of unexplained cases in the city at large—should serve to awaken interest in this growing danger to the public health, and help to correct the current medical point of view.

SOURCE OF THE DISEASE

The epidemiologic factors that have brought amebiasis to the United States, though published from a number of sources will nevertheless bear repetition.

The importation of and immigration to this country of peoples from areas in which the infestation is endemic, viz., the Negro, the races of southern Europe and Asia—Italians, Greeks, Turks, Syrians—the Mexican, the native of the West Indies and of South America, and similar racial extractions. This step in the process of infestation is now history. It occurred several generations ago.

Travel on the part of many of our people to regions where amebiasis is endemic, and whence some return infested.

Possibly the growing consumption of raw fruits and vegetables, some of which come from regions infested with amebas, such as California, Mexico, Tennessee, Florida and, in fact, most of the Southern states.

The stress of economic conditions, leading to the employment of cheap labor in the kitchens of the large urban hostels and food dispensing establishments, labor too often recruited from these infested areas.

A lack of a proper sense of personal cleanliness among food handlers and, again, not least in importance, lack of facilities for personal cleanliness and lack of the psychology of cleanliness in the kitchens.

PRESENT MODES OF SPREAD

Infestation with *Endamoeba histolytica* in this country usually implies the taking of food or drink that is contaminated with the bowel discharges in a case or carrier harboring the cysts of the parasite. Modern sanitation virtually precludes the general transmission of amebiasis by public water supplies and milk supplies. The transfer is accomplished mostly through food handlers. The latter were obviously responsible for the two recent outbreaks to which reference has been made.

The first warning of trouble came in 1927, when "seven or eight cases" were traced to a large hotel. The second outbreak here reported began in June, 1933 and up to September 1 comprised forty-two cases and carriers in another urban hotel. Suspicion had been directed to this hostelry by the occurrence in the city of several cases of amebic dysentery in persons who had been guests of the hotel.

PROCEDURE

With the cooperation of the management, the entire food handling personnel of the hostelry was examined by representatives of the laboratories of the board of health. A room with bath in the hotel was secured and equipped for the necessary laboratory examinations. A list of the food handling personnel was obtained and each person was ordered to report to the examination room. Here, specimens of feces were collected in half-pint paraffined cardboard containers and examined immediately.

Two or more preparations were made from each specimen, one mounted in warm distilled water, and the other stained with iodine.² The fresh preparation served primarily to demonstrate the active amebas, although encysted forms could also be seen. The iodine-stained preparation permitted differentiation of the cysts from other related forms, by a study of their cytology. When the specimens of feces were found to contain suggestive bodies, more smears were made, and these were always examined by two or more technicians. An additional specimen was procured whenever the first test proved unsatisfactory.

RESULTS

Of 364 food handlers examined up to Sept. 1, 1933, fifteen clinically active cases and eleven carriers of the cysts were found. These included five cooks, one sauce maker, one cold meat man, one baker, two butchers, five dishwashers, two counter girls, one waffle girl, seven waiters and one pantry boy. In addition, five other clinical cases were reported among employees not engaged in food handling, while eleven more clinical cases occurred among the guests or diners at the hotel. There was rather clear evidence of an outbreak of amebic dysentery during June, July and August, 1933.

EPIDEMIOLOGY

Quite evidently, then, amebiasis had become widespread among the kitchen help of this establishment at some time since 1927 when the former investigation was made, the exact origin of which cannot now be definitely established. However the epidemiologic possibilities are most interesting. With such appropriate foci infested as a "sauce maker," and a "cold meat cutter," together with twenty-four others throughout the kitchen personnel it is easy to understand the

¹ Read Oct. 9, 1933 before the Laboratory Section of the American Public Health Association at its sixty-second annual convention in Indianapolis.

² From the Section of Technical Service and Research, Chicago Board of Health, and the Douglas Smith Foundation of the Department of Medicine, University of Chicago.

³ Boeck, W. C. and Stiles, C. W. Studies of Various Intestinal Protozoa Especially Amebae of Man. Bull. 133. Hyg. Lab. U. S. P. H. S. Kofoid, C. A., Hornhauser, S. I. and Plate, J. T. Intestinal Parasites in Overseas and Home Service Troops of the U. S. Army. J. A. M. A. 73: 1721 (June 14), 1919. Craig, C. F. The Amebiasis Problem. J. A. M. A. 98: 1615 (May 7), 1932. Johnstone, H. G., David, M. A. and Reed, A. C. A Protozoal Survey of One Thousand Persons. J. A. M. A. 100: 728 (March 11), 1933.

² Kaplan, Bertha, Williamson, C. S. and Geiger, J. C. Amebic Dysentery in Chicago. J. A. M. A. 88: 977 (March 26), 1927.

³ The stain consisted of a 5 per cent aqueous solution of potassium iodide saturated with iodine which was then diluted with an equal amount of distilled water.

probable extent of the secondary cases that may have occurred among the guests, most of whom were transient visitors to the city

As to the primary origin of the outbreak one case in particular offers a plausible explanation. This man, a baker, was the only person who gave a definite history of having been previously infested. He had been found to be a carrier of *Endamoeba histolytica* in 1927, in the previous investigation by Kaplan, Williamson and Geiger.² At that time he was employed in another hotel. He was given a thorough course of treatment in a university hospital and after many negative laboratory tests was finally permitted to resume his occupation as a food handler. Now he is found again in the midst of another outbreak. Of course he may have been reinfested, but it seems most likely that his was a recurrent case. Frankly, we do not know what his relation may have been to the latest outbreak. But should not thought be given to the wisdom of permitting any such person, once found to be a carrier of *Endamoeba histolytica*, to resume work as a food handler, even though he may have had a most exacting course of treatment in the most competent hands?

EMERGENCY CONTROL MEASURES

The immediate measures adopted for control of the outbreak were

- 1 Prompt isolation and treatment of all cases and carriers found among the food-handling personnel
- 2 The promulgation of stringent hand washing and disinfecting regulations, with monitors posted in the toilets adjacent to the kitchens to see that these rules were carried out
- 3 The placing of placards bearing an order to wash and disinfect the hands, in all nearby toilets used by employees
- 4 Increasing the hand washing conveniences by installing additional wash bowls throughout the kitchen quarters
- 5 General cleaning and painting of the kitchens, pantries and store rooms in the entire plant, to promote the psychology of cleanliness

REGULATIONS

Tentative regulations were also drawn under which food handlers might be permitted to resume their occupation after a suitable course of treatment

Food handlers, after treatment for amebiasis and before being permitted to resume work, must have at least three successive negative specimens of freshly voided feces, taken at intervals of one week—the last two of which must be examined by the board of health laboratories

The laboratory procedure recommended is

- (a) A direct microscopic examination of a warm water preparation
- (b) A direct microscopic examination of an iodine-stained preparation
- (c) Examination of a fixed smear, stained with iron hematoxylin, for differentiation of doubtful encysted forms, and also for a permanent record of the observations
- (d) A culture on a suitable medium⁴

It is recommended further that all food handlers having a history of amebiasis be examined once a month for four months and thereafter every six months while working as food handlers

SUMMARY AND CONCLUSIONS

Sixteen clinical cases and eleven carriers of the encysted *Endamoeba histolytica* were found among 364

food handlers examined up to Sept 1, 1933, in a large hostelry. Five clinical cases had also been reported in other employees not engaged in food handling, and eleven clinical cases among the guests and diners

The effort to control the outbreak consisted of exclusion of the infested food handlers from the kitchens and rigid application of appropriate sanitary measures.⁶

The indications point to an old carrier, previously detected in 1927, as the most plausible primary source of the outbreak. Proof of this, however, is necessarily lacking, and there were several other plausible possibilities of causative agents among the food handling personnel

The danger of recurrence of the infestation, even after most thorough and competent treatment, is emphasized in the case of the employee mentioned, who was associated with a previous outbreak in 1927

It is recommended that food handlers who are known to have suffered from amebiasis be required to submit specimens of excreta every six months for examination by an approved public health laboratory, as long as they continue to work as food handlers

The incident reported is a striking illustration of the constant need of well equipped research laboratories in modern public health organizations—laboratories liberally manned by a well trained technical personnel, which can be drafted at a moment's notice for such emergencies as this and which in the meantime can be kept permanently and profitably occupied with a study of improved methods of conserving human life and health

AMEBIC DYSENTERY

A REVIEW

NOTE—The following article is compiled from a number of textbooks and periodicals in order that physicians may be aware of current knowledge regarding this disease. The development of the disease in a Chicago hotel and the occurrence of numerous cases throughout the United States indicate the desirability that physicians be fully informed concerning the symptomatology, differential diagnosis and treatment of amebic dysentery.—ED

Amebic dysentery, also called amebic colitis and enteritis, refers to infection of man by a protozoan parasite, *Endamoeba histolytica*. Originally considered a tropical disease, the infection is now frequently observed in the temperate zones. There are numerous carriers of the infection, and it has been estimated that from 5 to 10 per cent of the population may have the organism in their intestines. However there seem to be variations in the infectiousness of the condition at various times, so that apparently certain epidemics may carry greater intensity of the infection and higher morbidity and mortality than others

When the ameba invades the intestine it burrows under the submucous coat and produces its harmful effects by destroying the tissue with which it is in contact. Cytolytic and hemolytic substances, according to Craig¹ have been extracted from cultures of the

5 Continued observation of this focus of infection has served to reemphasize the necessity of examining such groups of food handlers several times in order to detect all those harboring *Endamoeba histolytica*. Evidently the parasite is not discharged regularly in sufficient numbers for certain detection by the laboratory methods thus far available. The use of cultures in addition to the direct microscopic examination has definitely proved its value in our hands. An interval between the laboratory examinations of such groups seems desirable to permit the development of incubative cases and to aid in the detection of those who apparently discharge the parasite intermittently.

1 Craig C F. Amebiasis in Musser Practice of Medicine 1932 p 241. Other articles that may be consulted include Simon S K. Amebic Dysentery in Tice Practice of Medicine 1927 p 271. Strong R P. Amebiasis in Nelson's New Loose Leaf Medicine 1932 vol 2 p 331. Sellards A W. Amebic Dysentery in Cecil Textbook of Medicine 1933 p 396.

4 A culture medium found satisfactory for growth of *Endamoeba histolytica* is a liver infusion agar medium prepared as described by Huddleston Halsey and Torrey (J Infect Dis 40:352 [Feb] 1927). Slants are made from this medium and just prior to the inoculation are covered with sterile inactivated sheep or horse serum diluted with six parts of sterile saline solution.

organism In the tissue of the intestine and under favorable conditions in the lumen of the intestine itself the ameba may divide into two daughter amebas, and this multiplication continues indefinitely until conditions unfavorable to further growth develop. Then the amebas become round, lose their motility and form cysts, which are covered with a cyst wall. These cysts are excreted in the feces and act as infective agents. The active stage of the ameba cannot pass through the stomach and live, as the hydrochloric acid of the gastric juice destroys the organism.

However, the cysts when taken into the body in food or in fluids break up in the lower part of the small intestine. Each cyst liberates a single ameba containing four nuclei. These nuclei again divide, producing eight, and then the parent organism divides into eight small amebulae, which develop into the form that causes the pathologic condition. The cysts when passed out of the body are resistant to various chemical agents and may live for weeks in water or in fecal material that is kept moist and in the shade. Living cysts have been found in the excrement of flies thirty-six hours after the flies have fed on infected feces. The cysts are destroyed by sunlight and by drying.

In the vast majority of cases, human beings are infected through food or water contaminated with the cysts. Such contamination occurs through the use of sewage for fertilizing vegetables, through flies and through contaminated water, but primarily in this country by contamination through food handlers who are carriers of the parasites.

SYMPTOMS

When a human being is infected with the ameba, he may develop an acute condition. He may be for a while without symptoms and eventually may develop a chronic condition. In acute amebic dysentery, the onset is usually sudden. There is severe pain in the abdomen, which is followed by an intense desire to defecate. The pain over the abdomen is severe. There may be vomiting and nausea although these are not most frequently reported. The diarrhea is exceedingly serious, beginning with from fifteen to twenty movements during twenty-four hours, and in some cases there may be from thirty to thirty-five. The first material passed contains mucus, but soon the stools are largely fluid in character, containing mucus, blood and shreds of mucous membrane. Tenesmus is severe, and the patient soon becomes weak and greatly depressed. Fever is rather infrequent but there may be slight fever proceeding to a rise in temperature associated with a diarrheal condition or with collapse.

In the majority of cases, these conditions persist for three or four days and then clear up, to be followed by further mild attacks from time to time. In some of these cases, chronic amebic dysentery supervenes. There is also in many instances an infection with bacillary dysentery superimposed on the amebic form of infection.

The tenesmus may be so severe that the patient must be almost constantly on the bed pan. In most cases the abdominal wall is retracted and rigid and exceedingly sensitive to the touch. Because of the tendency of the tenderness to localize in the right iliac region, cases are frequently mistaken for appendicitis. If the case is severe and long continued, the patient becomes emaciated and weak and may have jaundice and all the symptoms usually associated with chronic intestinal infection of this character.

If the condition becomes chronic there are repeated attacks of colic and diarrhea, loss of appetite, and the appearance of blood and mucus in the stools. Between attacks the health may be such as to permit the patient to work, but there are usually loss of appetite, disturbance of sleep, and other symptoms indicating the presence of the disease. Such cases have been reported to continue for years, eventually leading to a condition of chronic invalidism. Between the acute attacks there may be soreness over the abdomen, but otherwise physical signs are not noticeable.

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS

In the presence of an epidemic, a physician should, of course, be alert for the possibility of this disease in all forms of diarrhea, but particularly when the history of the patient indicates a possible contact with a carrier of the ameba. The typical attack of amebic dysentery may be diagnosed by an experienced diagnostician. In many of the cases, however, that have been occurring in connection with the recent epidemic the diagnosis is overlooked because the physician did not suspect the possibility.

Cases of amebiasis have been mistaken for bacillary dysentery, mucous colitis, ulcerative colitis, appendicitis, peritonitis and other disorders. The conclusive diagnosis is, of course, dependent on the finding of the organism in the stools. Moreover, it must be remembered that symbiotic infection with amebic dysentery and bacillary dysentery may occur. The majority of patients suffering with amebic dysentery are ambulatory. It may be possible for the physician to secure specimens of stools on which examination may be made, in other instances it may be necessary to use the proctoscope or the rectal tube in order to secure specimens for study. Furthermore, it may be necessary to examine several specimens of the stool in order to determine the presence of the ameba.

In the examinations made in the infested hotel in Chicago in connection with the present epidemic, as shown by the paper by Tonney, Hoeft and Spector in this issue, repeated examinations revealed in each instance that certain persons were carriers. In searching for cysts the more solid particles of feces are selected and diluted with physiologic solution of sodium chloride to form a thin smear. The nuclei lie at different levels so that careful focusing is necessary in order to distinguish their structure. Compound solution of cresol of double strength is sometimes used for staining the nuclei. When good laboratory facilities are available, specimens may be taken for immediate examination by a competent laboratory investigator. There are numerous special stains and fixation methods of aid in the determination of the presence of the ameba.

COMPLICATIONS

The complications of a more serious character are those related to the formation of abscesses in the liver and in various other organs of the body.

PROGNOSIS

Sellards says that approximately one third of the early cases are cured by a single complete course of emetine. Patients who relapse have a good outlook for recovery if the relapses are treated persistently and thoroughly. If, however, there is extensive secondary bacterial infection the patient may have difficulty in recovering his health.

TREATMENT

In the treatment of acute amebic dysentery, Charles F. Craig recommends particularly the use of emetine, as emetine hydrochloride or emetine bismuth iodide. "Emetine is a specific," he says, "so far as relief of symptoms is concerned, the patient being well on the road to a symptomatic recovery within the first few days after beginning treatment, but it is doubtful if it actually cures more than one third of the cases treated, even if repeated courses are administered. This drug finds its greatest field of usefulness in the treatment of the acute symptoms which disappear rapidly under its administration. It is best given orally or subcutaneously, and never intramuscularly or intravenously. When given by mouth, keratin-coated pills or capsules should be used, and not more than 0.1 Gm (1½ grains) should be given morning and evening in equally divided doses. The drug is seldom used alone by mouth, but the oral and subcutaneous methods are combined, 0.03 Gm (one-half grain) being given by mouth every evening, and 0.065 Gm (1 grain) subcutaneously every morning, for ten or twelve consecutive days. The oral administration is often entirely omitted and 0.065 Gm (1 grain) of emetine given daily for twelve days in cases that are not considered unusually severe. The treatment is repeated if relapses occur. Emetine is a toxic drug and, when given in too large a dose or over too long a period, causes severe diarrhea, myocarditis, neuritis, nervous prostration and great muscular weakness, and death may occur suddenly from cardiac failure. Such symptoms should be carefully watched for and, if they appear, the drug should be discontinued at once. During the treatment the patient must be kept in bed.

"Chiniofon is administered orally and by enema in the treatment of acute amebic dysentery. For an adult the course of treatment consists in the oral administration of 1 Gm (15 grains) three times a day for eight to ten days, intermitted for a week to ten days, and the same dosage repeated. Severe diarrhea may be caused by the recommended dosage and, if so, the dose should be reduced one half. To secure the best results with this drug, the use of enemas containing chiniofon should be combined with the oral treatment. If this is done, 0.5 Gm (7½ grains) of chiniofon should be administered three times a day by mouth and a daily enema should be given of 200 cc of a 2 per cent warm water solution of chiniofon, which should be retained for several hours. The treatment should be continued for ten days. If the full dose of 1 Gm of chiniofon three times a day is given, combined with the enemas, severe diarrhea is very apt to occur, and the results obtained with the smaller dosage are apparently as good. Throughout the treatment the patient must remain in bed. Chiniofon is a less toxic drug than either emetine or emetine bismuth iodide, and is apparently more efficient in curing amebic infections."

In the chronic cases Craig recommends continuous treatment with emetine bismuth iodide or chiniofon. He also points out that the condition is long standing, relapses frequently occur and the prospect of complete cure with any known method of treatment is poor.

Acetarsone has been used in the treatment of acute amebic dysentery and excellent results are reported, but Craig believes that emetine or emetine bismuth iodide should be used first and this followed with

acetarsone in case the patient becomes a carrier. Acetarsone is given in this condition in doses of 0.25 Gm in tablet form three times daily by mouth for one week only. After an interval of one week or ten days a second course may be given if the amebas persist.

It must be remembered that the margin between the toxic and the therapeutic doses of emetine is small. Because of the danger of poisons as manifested by increase in the pulse rate, loss of weight or peripheral neuritis, the physician must give the product with care.

Drs. N. A. David, A. C. Reed and C. D. Leake have used a product related to chiniofon, known as iodo-chloroxyquinoline (vioform N. N. R.). This product is given in a dose of 0.75 Gm by mouth in gelatin capsules daily for ten days, with a repetition of the course of treatment after a week's rest period. A total of 15 Gm is thus given in about a month's time. Thirty-nine out of forty-seven cases of human amebiasis were cleared of *Endamoeba histolytica* in the stools on repeated examination over a period of four months after treatment was stopped. Amebiasis recurred in the stools of five patients within two months after treatment was stopped but were eradicated by repetition of the treatment. Three very severe cases could not be cleared. The authors report that the total dose of the drug administered did not exceed 600 mg per kilogram in any one case, and in no case was any evidence of toxicity observed. In their report they believe that vioform is the most efficient drug of any type used in amebiasis.

Carbarsone was used in chronic amebiasis with the dosage of 250 mg in gelatin capsules twice daily for ten days. Of thirty-three patients who had stool examinations at daily intervals for three months after cessation of treatment, the stools were free of *Endamoeba histolytica* in thirty cases, with prompt relief from symptoms and general improvement in physical condition and without any untoward effects.

So far as concerns general treatment, Craig says: "Confinement to bed is necessary in patients suffering from acute dysentery or acute exacerbations of the chronic type. A proper diet is of great importance and the smaller the amount of food taken while there are acute symptoms, with due regard to conserving strength, the better. During acute symptoms the diet should consist of broths, barley water, egg albumin, and milk with lime water. Pure milk or malted milk may be used when the acute symptoms improve and eggs, soft puddings and a semifluid diet should be given after the subsidence of the acute symptoms. A full diet is gradually adopted during convalescence, care being taken to avoid foods that are known to irritate the intestine. Alcohol should be forbidden in all cases of amebiasis, especially in those presenting dysenteric symptoms, and even in 'carriers' indulgence in alcoholic stimulants frequently results in the appearance of symptoms, while in the chronic amebic dysentery patient alcoholic indulgence is often followed by a relapse of the dysenteric condition. The use of tonics during convalescence is indicated."

The cure of amebiasis can be determined only by the permanent disappearance of the amebas from the feces, and every treated case should have repeated examinations of the feces for a period of at least four months after the cessation of treatment. If trophozoites or cysts reappear treatment should be repeated."

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SATURDAY, NOVEMBER 18, 1933

THE AMEBIC DYSENTERY EPIDEMIC

Elsewhere in this issue appear two reports emanating from the department of health of the city of Chicago relative to an epidemic of amebic dysentery, with a focus in a hotel in Chicago. Briefly, the appearance of an unusual number of cases of amebic dysentery about the middle of August aroused the attention of the department of health. These cases were traced to one hotel. Steps were taken immediately to investigate the personnel in that institution, with the result that eventually more than 25 per cent of the food handlers were found to be infested with *Endamoeba histolytica*.

In the meantime it became apparent that many of the guests who had visited this hotel between May and the date of the examinations had become infected and had returned to their homes. There, after a more or less variable period of incubation, they developed the acute symptoms which are typical of this disease. Because of the unusual character of the condition, the diagnosis seems in many instances to have been overlooked. Many of these cases were diagnosed as ulcerative colitis, some appendicitis or peritonitis, and others in other ways. Among those infected were many persons of note, including, for example, some of the leaders of the lumber industry, who had held a convention in the hotel during the end of June, and also many important characters of the stage and of political life. Food handlers, particularly dish washers and kitchen help, are a floating group of workers. Some of those infected had wandered to other hotels, and one neighboring hotel has already shown several cases of infection among food handlers.

Of special interest in connection with the tracing of this epidemic is the fact that two of the food handlers concerned were implicated in a small epidemic that occurred in another Chicago hotel in 1927. At that time seven or eight cases developed, the original case apparently being that of a cook who was thereafter treated in a hospital and pronounced cured. This cook and another food handler also infected in the 1927

epidemic, were found among the employees of the hotel chiefly concerned in the present epidemic.

The situation is apparently unique as far as epidemics of amebic dysentery in this country are concerned. The measures taken by the department of health are outlined in the articles by Drs. Bundesen and Tonney and their associates. One of the most important, so far as the rest of the country is concerned, is the sending of a questionnaire to the 22,000 guests of the hotel during the period from May to November, 1933, with the hope of determining the number of persons infected and now, no doubt, acting as carriers in other parts of the United States. Apparently the condition has already appeared in at least fifty other cities. This indicates the likelihood of its appearance in many more.

From the time when the condition was first ascertained until the first week in November, the health department endeavored to control this condition by the examination of every food handler in the hotel and by the elimination from employment of those found to be infected. In the meantime the hotel continued its regular service in the dining rooms and in its banquet halls. About the first week in November, when the gravity of the situation became more apparent, orders were issued to the hotel to discontinue all banquets, since it is necessary under such circumstances to bring in additional waiters, dish washers and other kitchen help to provide for the excess number of persons eating in the banquet halls and in the dining rooms. Obviously, it is impossible to say just how long these measures will be maintained. A study of the records of persons who stopped in the hotel during September and October will show eventually whether or not the methods followed were efficient for the protection of the public or whether it is necessary, in the presence of such conditions, to discontinue food service entirely.

The assertion has been made that *Endamoeba histolytica* is of uniform virulence, hence some investigators have urged that symbiotic infection with bacteria and *Endamoeba histolytica* is necessary for such serious manifestations as have occurred in connection with the outbreak in one Chicago hotel. Now comes the report of an investigation by Frye and Meleney¹ working in the Department of Preventive Medicine and Public Health of Vanderbilt University, which shows that various strains of amebas may vary in virulence. They studied five strains of *Endamoeba histolytica*, two from a community in the hill country of middle Tennessee, one being a symptomless carrier and the other a chronic case, two additional strains were obtained from acute cases in western Tennessee and the fifth was from another symptomless carrier. The investigators concluded that bacteria or their products or some other substances in the cultures of *Endamoeba histolytica* apparently do sometimes play a part in the production

¹ Frye W. W. and Meleney H. E. Studies of *Endamoeba histolytica* and Other Intestinal Protozoa in Tennessee. VI. The Influence of the Bacterial Flora in Cultures of *E. histolytica* on the Pathogenicity of the Amoebae. *Am. J. Hyg.* 18: 543 (Nov.) 1933.

of lesions in the kitten's intestine—the trial animal in these studies—but that they are not an important factor in the difference in pathogenicity between different strains. This difference is probably due to a difference in the pathogenic activity of the amebas themselves.

The only protection for the public is the detection of every infected food handler and the elimination of such persons from this occupation. Such measures are now being put into effect in Chicago hotels. Once the carriers become ambulatory, however, it is exceedingly difficult to control their movements. Moreover, it becomes necessary for the hotel that wishes to protect itself to insist on an examination of every new person applying for work in its kitchens and dining rooms. As the guests are transients, it is difficult to trace the appearance of the secondary cases. This is particularly true because of the varying incubation period of amebic dysentery, namely, from nine to ninety-four days.

In presenting this material, *THE JOURNAL* emphasizes the subject in order that physicians throughout the country may inform themselves concerning the early symptoms and the methods of diagnosing amebic dysentery. The special articles indicate the necessity for laboratory study to confirm the diagnosis. Efforts should be made to trace to the original focus as far as possible the history of such cases as present themselves. Finally, the public should be made aware of the necessity for more stringent control of food handlers. Repeatedly, American investigators and clinicians have emphasized the increasing menace of amebiasis in this country. Formerly this was considered a tropical disease. Today cases appear in every state. The widespread character of the hazard, particularly in view of the tremendous dissemination that has taken place from the Chicago epidemic, demands the consideration of every public health authority.

AN EVALUATION OF PSYCHOANALYSIS

The article of Leo Kessel and Harold Thomas Hyman¹ on "The Value of Psychoanalysis as a Therapeutic Procedure" represents a rare—and in American medical literature—perhaps even a unique occurrence. It is an objective and an entirely unemotional report of therapeutic results in thirty-three cases treated by accredited psychoanalysts in New York. Its merit lies particularly in the fact that it lacks any preconceived tendency to discredit this new approach to psychogenic disturbances. The authors subject the psychoanalytic results to the unbiased critical scrutiny they would use in evaluating any other form of therapy. In 1930 the Berlin Psychoanalytic Institute published a careful statistical evaluation of 721 cases that had been treated in the period of ten years by its staff, all the members of which are psychoanalysts accredited by the International Psychoanalytic Association. This statistical

report, however, was prepared by psychoanalysts. Perhaps a parallel to Kessel and Hyman's fair attempt at evaluation of the work of psychoanalysts is the report published four years ago by the commission of the British Medical Association. This commission was entrusted with the difficult task of evaluating psychoanalysis as a medical theory and procedure. Its report, however, though entirely objective in tone and attitude, was not based on statistical analysis of cases treated by psychoanalysis.

The attempt of Kessel and Hyman to arrive at objective conclusions regarding the therapeutic value of psychoanalysis is in itself so significant that possible disagreements regarding smaller details of their statistical analysis seem unimportant. Final conclusions can hardly be drawn from a study of such a small number of cases. This is especially true because their study includes cases of such diverse nature as schizophrenia and mild behavior problems. The majority of psychoanalysts at present seem to consider the concepts of psychoanalysis most helpful for understanding the meaning and structure of schizophrenia but feel at the same time that an adequate therapeutic technique for such cases has not yet been developed. The application of psychoanalysis to schizophrenia is still definitely in an experimental stage.

Naturally, many psychoanalysts will question the soundness of some of the principles followed by the authors in the evaluation of therapeutic results. Kessel and Hyman consider it an evidence of failure of the analysis if the analysis ends with a change in the life situation (marital status) of the patient which is contrary to the purpose with which the patient started his analysis, even though the symptoms and the neurosis may have been cured as a result of the treatment. The objection of psychoanalysts would be that frequently the patient's life situation, as, for example, his marriage, has been itself the result of his neurosis. Neurotics, it is said, often choose unsuitable marital partners just as they choose unsuitable vocations, as a result of certain neurotic trends. In such cases it is quite unavoidable that the patient's cure sometimes results in his reorienting himself in his life situation. Leading psychoanalysts claim that improvement of a marital relation is a more frequent outcome of analysis than is divorce. In any case the neurotic patient's expectations and demands at the beginning of the cure are frequently integral parts of his neurosis. It is at present a recognized principle in psychoanalytic practice, as in therapeutic science generally, that, in accepting a patient for treatment, the analyst or physician should not allow the patient to prescribe the conditions for his cure. Just as an internist could not possibly allow a diabetic patient to demand that he be made capable of tolerating a diet of the patient's own choice, so also is it not permissible for a psychoanalyst to undertake the task of making a violin virtuoso out of a person without musical talent.

¹ Kessel, Leo, and Hyman, H. T. "The Value of Psychoanalysis as a Therapeutic Procedure," this issue, p. 1612.

There is no question that both psychoanalysts and other physicians will welcome statistical studies, such as Kessel and Hyman's, which alone can form the basis for sound conclusions regarding the therapeutic efficiency of psychoanalysis. Psychoanalysts, however, will probably feel that the significance of psychoanalysis lies not only in its therapeutic value but perhaps even more in its method of scientific approach and in the theoretical concepts which it contributes to the better understanding of psychopathologic phenomena. They maintain that the soundness of their concepts and methods of studying mental phenomena should warrant the hope of further improvements in therapeutic technique.

COLD ALLERGY AND DROWNING

In so-called predisposed or sensitive persons, light, heat or cold may cause not only cutaneous reactions from contact but also more or less serious internal reactions. It is customary nowadays to speak of such reactions as manifestations of physical allergy, that is, a changed reactivity to physical agents.¹ There are persons who are sensitive to cold in a peculiar manner. In such cold-sensitive persons exposure to cold atmosphere, cold objects or cold water may cause redness, itching, urticarial eruptions, edema of the skin, pain in the joints, sneezing and swelling of the nasal mucous membrane, and asthmatic symptoms. There may develop headache, dizziness, dyspnea, nausea, palpitation, hemoglobinuria and other serious disturbances of a general nature. In cold-sensitive persons, exposure of large areas of the body to cold as, for instance, by bathing in cold water or by walking in a cold, moist wind, may give rise to severe "shock" in which shifting of blood from the external surfaces to the visceral capillaries may be an important factor. It seems also that cold may act to set free a substance or substances that cause severe local and even dangerous general reactions. It is reported that the serum from a part where active reactions to cold are going on may set up such reactions elsewhere. It is reported also that by frequent short exposures to cold the sensitiveness may be reduced ('desensitization'). There is, or at least there seems to be, a close analogy between cold allergy and serum disease.

Apparently, cold allergy may play a special part in serious developments, leading even to death while bathing in cold water. Every now and then instances of death in water occur that are difficult to explain on the score of typical drowning. Probably deaths of this nature may occur in persons who are subject to cold allergy. Obviously even the milder effects of cold allergy may increase the danger to the victim from drowning in the usual sense. Thannhauser² reports that an athletic physician, aged 46 who was subject to

urticaria and other unpleasant effects from contact with cold water, while bathing in a mountain lake developed erythema, itching, and oppression in the chest, he left the water immediately but remained in a state of extreme weakness with strong colonic peristalsis for one hour. In such a case drowning might result from the weakness. Grassl,³ himself the victim of a severe cold allergy with unconsciousness while swimming in cold water on a hot day, mentions the rescue by a bystander of a healthy woman, aged 50, who became suddenly ill with vertigo and vomiting while bathing, the legs swelled up greatly and became very painful. Zum Busch⁴ describes his own case. Since childhood he has been sensitive to cold, on putting his foot out of the warm bed he experiences sneezing and running of the nose, in cold water his hands swell up and become red and itchy, several times when swimming sudden weakness has come on, so that he could reach shore only by supreme effort, followed by collapse and an eruption of giant urticaria about the joints, a similar reaction developed once in a cold air bath. He makes the interesting remark that hypersensitiveness like his may be present only at times.

Two important practical lessons emerge from this consideration. Persons who are sensitive to cold risk their lives bathing in cold water. Also in efforts to determine the exact mode of death in water, the possibility of death from the direct or indirect effects of cold allergy should not be overlooked.

Current Comment

THE ABSORPTION OF DEXTROSE BY RECTUM

There are times and circumstances in which it is difficult, if not actually impossible, to introduce food and drink into the body in the usual way by mouth. The alternative paths on such occasions call for parenteral infusions or rectal administration. The water requirement can be temporarily met with success by such means. With respect to energy intake when oral feeding is interfered with, the situation is much more complicated. Not many years ago it was assumed that rectal feeding was an available procedure. Various types of fluids, notably milk, were introduced into the rectum in expectation of at least a partial utilization through the lower portions of the large intestine. The outcome was in general disappointing except to the degree to which the patient secured water by the attempts at rectal alimentation. An explanation followed when physiologists began to realize that digestion is a prerequisite to absorption, even for compounds as simple as cane sugar. This meant that only so far as the food materials introduced by rectum were pre-

¹ Duke W. W. Clinical Manifestations of Heat and Effort Sensitiveness and Cold Sensitiveness. *J. Allergy* 3: 257 (March) 1932.
Treatment of Physical Allergy. *ibid.* 3: 408 (May) 1932.
² Thannhauser S. J. Zur Frage des Badetodes. *München med. Wehnschr.* 79: 1890 (Nov. 18) 1932.

³ Grassl. Zur Frage des Badetodes. *München med. Wehnschr.* 79: 1469 (Sept. 9) 1932.

⁴ Zum Busch J. P. Ueber plötzlichen Tod im kalten Bade. *Deutsche med. Wehnschr.* 59: 15 (Jan. 6) 1933.

digested or otherwise suitable for absorption could they be properly utilized. With this understanding, feeding by rectum became reduced to the use of the physiologic carbohydrate dextrose. Even with such a readily absorbed product, the possibility of alimentary decomposition by micro-organisms is not excluded. A review of the literature¹ discloses a marked difference of opinion on the absorption of dextrose by rectum despite the record of experiences since the beginning of this century. Last year Scott and Zweighaft² of New York asserted, on the basis of observation on fifty medical students, that there is no evidence of the absorption of dextrose when it is given in a 10 per cent concentration (40 Gm). The latest study by Collens and Boas³ of Brooklyn is more heartening. They were not primarily interested to know whether absorption, if it did occur, was equal in rate and degree to that occurring when dextrose was given by the oral route. It was important to determine whether a patient to whom dextrose could not be administered orally and for whom the parenteral route was contraindicated could derive the benefits of dextrose when it was in contact with the large intestine. Their evidence was in favor of absorption. As much as nine tenths of the dextrose administered disappeared in some cases in this way. Collens and Boas contend that although dextrose does not pass through the membrane of the colon as rapidly as through that of the small intestine, a sufficient amount is absorbed to warrant recognition of this method as an acceptable therapeutic procedure.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

- November 21 Growing Pains
- November 23 Nutrition versus Malnutrition

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

- November 25 Infections of the Hand

A M A Broadcasts Over National Broadcasting Chain

Arrangements have been completed with the National Broadcasting Company for a series of health broadcasts by the American Medical Association over two of the networks of that company. The time will be each Monday from 3:15 to 3:30 Eastern standard time (2:15 central standard time). The first broadcast will be made Monday, November 20, by Dr. Morris Fishbein. His subject will be "Amebic Dysentery." Subjects and speakers for subsequent broadcasts will be announced weekly in *THE JOURNAL*.

¹ Collens, W. S. and Boas, L. C. Absorption of Dextrose by Rectum. *Arch. Int. Med.* 52:317 (Aug.) 1933.

² Scott, E. L. and Zweighaft, J. F. B. Blood Sugar in Man Following the Rectal Administration of Dextrose. *Arch. Int. Med.* 49:71 (Feb.) 1932.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News—At a meeting of the Tri-County Medical Society (Union, Ouachita, Columbia) in Camden, October 5, the speakers were Drs. Willis C. Campbell and William C. Chaney, Memphis, on the fracture problem and the anemias, respectively. The Ashley County Medical Society was addressed at Crossett, September 12, by Drs. Francis W. Caruthers, Little Rock, on fractures, Pat Murphy, Little Rock, epilepsy, and Melville W. Hunter, Monroe, La., nephritis.

In Memory of Dr. Bathurst—The *Journal of the Arkansas Medical Society* for October was designated the "Bathurst Memorial Issue," in honor of the late Dr. William R. Bathurst for many years its editor. It contains resolutions adopted by county medical societies throughout the state, and tributes from various other organizations. Dr. Bathurst died, August 31. In addition to having been secretary of his state medical society, Dr. Bathurst was professor of dermatology at the University of Arkansas School of Medicine.

COLORADO

Society News—At a meeting of the Crowley County Medical Society in Ordway, October 11, Drs. George B. M. Baker, Rocky Ford, spoke on "Pneumonia Treatment and Mortality as Compared with Forty Years Ago"; William M. Desmond, "Tonsillitis, Its Cause and Treatment"; and Earnest O. McCleary, "Etiology and Treatment of Chorea." Dr. William C. Howell, Colorado Springs, addressed the El Paso County Medical Society, October 11, on hyperinsulinism. Mr. Harvey T. Sethman, executive secretary, state medical association, discussed the regulations for allocation of emergency relief funds for medical care. The Larimer County Medical Society heard Dr. George B. Packard, Jr., Denver, discuss "Surgical Abdominal Emergencies in Children," October 4, in Fort Collins. A recent meeting of the Mesa County Medical Society was addressed by Drs. Guy C. Cary, Grand Junction, and Henry H. Zeigel, Collbran, on malignant conditions of the eye and the uterus, respectively. The San Luis Valley Medical Society was addressed in Alamosa, October 7, by Drs. Robert G. Packard and Osgood S. Philpott, Denver, on "Compression Fractures of the Spine" and "Syphilis," respectively. Dr. John A. Schoonover, Denver, spoke on the mentally deficient child before the Weld County Medical Society in Greeley, October 2. At a meeting of the Pueblo Mental Hygiene Association, Dr. Philip Work, Denver, spoke on "Need of Mental Health and How to Obtain It."

CONNECTICUT

The Harry Burr Ferris Lecture—Bradley M. Patten, Ph.D., associate professor of embryology and histology, Western Reserve University School of Medicine, Cleveland, delivered the first Harry Burr Ferris Lecture in Anatomy at Yale University, October 27. The lecture was entitled "The First Heart Beat and the Beginning of the Circulation of the Blood of the Embryo—Studies with Micro-Moving Pictures," and was the first to commemorate forty-two successive years of teaching of anatomy by Dr. Ferris at Yale.

One Hundred and Fiftieth Anniversary of Society—The New Haven County Medical Association will celebrate the one hundred and fiftieth anniversary of its founding January 5. A historical meeting in the afternoon will be addressed by Dr. Creighton Barker, secretary of the society, on "The Founding of the Association in 1784," Dr. George Blumer, "The First Medical Transactions, 1788," Harold S. Burr, Ph.D., "The Founding of the Medical Institute of Yale College" and Dr. Thomas H. Russell, Jr., "Chronicle of Events in the Association after 1840." There will be a display of New Haven County medical bibliography in the Sterling Memorial Library under the direction of Andrew Keogh, librarian of the Yale University Library, and an exhibition of medical memorabilia at the New Haven Colonial Historical Association and of medical portraits in the gallery of the School of Fine Arts. A five o'clock tea will be served at the

meeting of the New Haven Colony Historical Association. In the evening, Dr Harvey Cushing will give an address in the auditorium of the Sterling Law Building.

DISTRICT OF COLUMBIA

Health at Washington—Telegraphic reports to the U S Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended November 4, indicate that the highest mortality rate (197) appeared for Washington, and the rate for the group of cities as a whole, 111. The mortality rate for Washington for the corresponding period last year was 158, and for the group of cities, 103. The annual rate for eighty-five cities for the forty-four weeks of 1933 was 108, as compared with 11 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly rates, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

GEORGIA

Society News—The Georgia Urological Society was addressed, October 26, by Drs Louis M Orr, Jr, Orlando Fla, on "A Clinical Consideration of Movable Kidney", Stephen T Brown, Atlanta, "Nephroptosis", James J Rivenel, Charleston, S C, "Congenital Hydronephrosis", Harry Y Righton, Savannah, "Chronic Prostatitis," and Montague L Boyd, Atlanta, "Urinary Tract Infections."—At a meeting of the Tri-County Medical Society (Calhoun, Early and Miller), Dr Daniel L Seckinger among others, spoke on "Treatment of Malaria, with Special Reference to Atebrin."—Philip P Jacobs, Ph D, New York, reviewed the treatment of tuberculosis from the eighteenth century to the present day before the Georgia Medical Society, Savannah, October 10.—Dr Newdigate M Owensby, Atlanta, presented a paper before the Fulton County Medical Society November 2, on "The Mind as a Factor in Bodily Disorders."

IDAHO

Report of Survey of Public Health Administration—The creation of a state health department with suggestions for its organization on a nonpolitical basis was the chief recommendation of Dr Frederick T Foard Jr acting assistant surgeon, U S Public Health Service, in his report on a survey of public health administration recently completed in Idaho. As an alternative, in case the establishment of a state department of health should be considered not feasible at this time, the health official suggested a bureau of public health, so that the organized health work of the state could be maintained separately from the activities of the department of public welfare, which now regulates all matters relating to public health. Further recommendations governed the administration of local health activities, with stress placed on the establishment of full time county or district health units. Twin Falls County has the only county health department in the state on a full time basis. The report urges that the state department of public welfare make an effort to stimulate the reporting of notifiable diseases. The report revealed that while Idaho has a law requiring the examination of food handlers, this requirement is largely neglected. More frequent inspections of food establishments are recommended, with the suggestion that these inspections be conducted by local authorities, under regulations promulgated by the state board of health. Raw and pasteurized milk supplies in Idaho are without adequate sanitary supervision, it was stated, while apparently there is no program for the control and supervision of market milk supplies and no attempt made to stimulate the production of safe milk on a statewide basis. It was recommended that this supervision of dairies and dairy products be placed under the division of sanitary engineering. The dissemination of health information in the newspapers by the department of public welfare was urged. The state department of public welfare has at present no program for education or publicity. There is no state public health association, and annual conferences of state and local health workers are not held. State health laws are badly in need of revision, some are obsolete while others cannot be enforced by the limited personnel of the department of public welfare. Idaho had a state board of health from 1907 to 1919, when the cabinet form of government was adopted and public health work was transferred to the department of public welfare. Although the death rate in the state is low in comparison with the average for the registration area, it has shown a consistently upward trend during the past ten years, having risen from 908 in 1922 to 999 in 1931. The peak of this period was reached in 1930 with a rate of 1006.

ILLINOIS

Society News—Dr Frank Garm Norbury, Jacksonville discussed psychoneuroses not requiring institutional care before the Adams County Medical Society, November 13, in Quincy.—Dr Solomon Strouse, Chicago, discussed obesity before the Will-Grundy County Medical Society, November 8.—At a meeting of the Bureau County Medical Society in Spring Valley, November 7, Dr Charles Morgan McKenna, Chicago spoke on 'Diagnosis and Treatment of Diseases of the Kidney'.—Speakers before the Southern Illinois Medical Association November 2-3 at Centralia included Drs Llewellyn Sale and Vilray P Blair, St Louis, on blood dyscrasias and correction of face injuries, respectively, Walter C Alvarez, Rochester, Minn, common causes of nervous indigestion, and Harry S Crossen, St Louis, inflammatory conditions of the female pelvis.—At a meeting of the Iowa and Illinois Central District Medical Association in Moline, October 26, Dr Bert I Beverly, Chicago, spoke on 'Behavior Disturbances in Childhood'.

Chicago

Research in Sex—The National Research Council, Washington, D C, has given \$21,000 to the University of Chicago for research in problems of sex. The amount will be divided into \$8,000 for the investigation of the biochemistry of sex hormones, under the direction of Fred C Koch Ph D, and \$13,000 for investigations in the biology of sex under the direction of Dean Frank R Lillie, Ph D.

Society News—The Chicago Council of Medical Women was addressed, November 3, by Drs Minnie S O Perlstein and Esther T Frankel on 'Lymphogranuloma Inguinale' and 'Use of Ultraviolet Light in Neuralgic Pain,' respectively.—Speakers before the Chicago Surgical Society, November 3 included Dr Fred W Rankin, Lexington Ky, on 'Cancer of the Colon Notes on Its Surgical Treatment'.—At a meeting of the Chicago Pathological Society, November 13, the speakers included Dr Victor Levine on 'Myocardial Changes in Essential Hypertension'.—The theme of the meeting of the Chicago Academy of Criminology, November 9, was classification of prisoners and individualization in management. The speakers were Dr Paul L Schroeder, Andrew Brown, Ph D, and Mr Donald Clemmer.—Dr Arturo Castiglioni, professor of the history of medicine, University of Padua, lectured in the Italian Pavilion, Century of Progress, November 6, his subject was 'The Renaissance of Medicine in Italy'.

INDIANA

Personal—Dr Amos C Michael has been appointed instructor in pathology at Indiana University School of Medicine, Indianapolis.—Dr Thomas J Clutter, Mentone, has been appointed health officer of Kosciusko County succeeding the late Dr Pierre G Fernier Leesburg.—Dr George C Porter, Linton, has been appointed coroner of Greene County.

Society News—A symposium on gastro intestinal disorders was presented before the Indianapolis Medical Society, November 14, by Drs Edgar F Kiser, Richard W S Owen and John A MacDonald. Dr Kiser discussed the Beaumont centenary. Dr Albert Graeme Mitchell, Cincinnati, will speak before the society, November 21, on tonsillectomy, and Drs Harry K Langdon and Okla W Sicks will present a symposium on vaccine therapy and bacteriophage, November 28.—Dr Walter C Alvarez Rochester, Minn, spoke on functional indigestion before the Lake County Medical Society in Hammond, November 3. Dr William D Weis, Hammond was recently elected to life membership in the society, the third member to be so honored in the history of the society.—At a meeting of the Thirteenth District Medical Association in South Bend November 1, Dr William A Evans, Chicago, read a paper on the effect of the depression on health.—Dr Max M Peet, Ann Arbor, discussed "Surgery of the Sympathetic Nervous System" before the Northwestern Indiana Academy of Medicine at Kendallville October 26.

IOWA

Society News—At a meeting of the Woodbury County Medical Society in Sioux City, October 24, Dr Arthur E Hertzler, Halstead, Kan, gave an illustrated talk on diseases of the mammary gland.—Dr John I Marker, Davenport, was elected president of the Southeastern Iowa Medical Society, October 19, at its annual meeting. The principal speaker was Dr Edwin F Schneiders, Madison, Wis, on gynecologic and obstetric emergencies.

Dinner to Dr Taylor—The Wapello County Medical Society was host to the Ninth Councilor District Medical Society and other invited guests at a dinner in Ottumwa,

October 17 in honor of Dr Charles B Taylor, Ottumwa, president of the Iowa State Medical Society Dr Oliver J Fay, Des Moines, was toastmaster Speakers included Drs Fred M Smith, Iowa City, on "Dr Taylor as a Man", Daniel J Glomset, Des Moines, "The Future of Medicine in Iowa" John H Peck, Des Moines, "Activities of the State Medical Society," and William C Newell, Ottumwa "Dr Taylor's Local Medical Society Activities" Dr Royal F French, Marshalltown, gave an illustrated address following the banquet on his medical experiences in Indiana

LOUISIANA

Society News—At a meeting of the Orleans Parish Medical Society, October 9 the speakers were Drs Clyde Brooks on arthritis Herbert R Unsworth the dangers of the promiscuous use of spinal analgesia, and Thomas B Sellers, infection in the "innocent-looking cervix" as a causative factor in pelvic lymphangitis—Speakers before the Madison, East Carroll and West Carroll Tri-Parish Medical Society in Oak Grove, September 5, were Drs Augustus Street, Vicksburg, Miss, on bone tumors, Berry C Abernathy, Soudheimer, treatment of gonorrhea in the male and Leon S Lippincott, Vicksburg, encephalitis—At a meeting of the Eighth District Medical Society in Alexandria, October 4, Drs Guy A Caldwell, Shreveport, spoke on Perthes' disease, John A Lanford New Orleans, malignant conditions of the breast, Joseph E Heard, Shreveport, toxic thyroid, James M Bamber, New Orleans, diagnosis and treatment of hypertensive and arteriosclerotic heart diseases, and E W Alton Ochser, New Orleans, carcinoma of the stomach—Dr Lucian H Landry, New Orleans presented a paper on head injuries before the Second District Medical Society September 21, in LaPlace, and Dr Charles J Bloom, New Orleans, discussed brain injuries of the new-born

MAINE

Society News—Dr Warren E Kershner, Bath, spoke before the Androscoggin County Medical Society, September 28, on "Socialization of Medicine"—At a meeting of the Portland Medical Club October 3, Dr Edward A Greco spoke on "Significance of Childhood Type of Tuberculosis"—The Oxford County Medical Association was addressed in Bethel September 12, by Drs Joseph H Pratt, Boston, Lester Adams Greenwood Mountain and George E Young, Skowhegan, on "Prevention and Cure of Tuberculosis in Oxford County"

MARYLAND

Old Medal Presented to Museum—A gold medal given to Dr Nathaniel G Keirle in 1866 by the trustees of the Baltimore City Almshouse for extra duty and faithful services rendered during the prevalence of typhus fever in the institution" was presented to the museum of the Baltimore City Medical Society, recently, by the Research Club of the College of Physicians and Surgeons Dr Keirle was for many years a member of the faculty of the college

Dr Williams Appointed Professor of Public Health—Dr Huntington Williams, commissioner of health of Baltimore, has been appointed professor of hygiene and public health at the University of Maryland Medical School Dr Williams has been health commissioner since the death of Dr C Hampson Jones in 1932 The previous year he resigned as secretary of the New York State Department of Health Albany, to become director of health of Baltimore a new position created to increase the efficiency of the city health department (THE JOURNAL, Sept 10, 1932 p 923)

Society News—Dr Chevalier Jackson, Philadelphia, spoke before the Baltimore City Medical Society, November 3, on "Clinical Observations on Suppurative Diseases of the Lung"—At a meeting of the Osler Historical Society in Baltimore November 21 the speakers will be Drs Julius Friedenwald and Samuel Morrison on "The Importance of Beaumont's Contribution to Gastro-Enterology," and David I Macht "Mandrakes in the Bible Classics Shakespeare and Pharmacology"—Dr George W McCoy, director, National Institute of Health Washington D C discussed the St Louis epidemic of encephalitis recently before the Prince Georges County Medical Society at Landover

Personal—Dr Humphrey Warren Buckler has been temporarily appointed assistant commissioner of health of Baltimore succeeding the late Dr John Frederick Hempel pending a promotion examination to be limited to medical employees of the city health department Dr Buckler is director of health work in the public and parochial schools and has been con-

nected with the city health department since 1907—Dr Robert Marshall Allan, professor of obstetrics and gynecology, University of Melbourne, Australia, is in Baltimore observing the work at Johns Hopkins Hospital and the University Hospital—Dickinson College, Carlisle Pa conferred the honorary degree of doctor of science on Dr James H Mason Knox, Jr, Baltimore, recently

MASSACHUSETTS

Dr Richards Honored—Dr George L Richards, Fall River, was honored at a dinner, September 27, by the staff of the Union Hospital and the Fall River Medical Society, in recognition of his completion of fifty years in the practice of medicine A silver platter was presented to Dr Richards on behalf of the hospital staff Dr Eugene A McCarthy was toastmaster

Society News—At a meeting of the Norfolk District Medical Society, October 31, Dr Harry J Inglis Boston, discussed paranasal sinus disease and the general practitioner—The Boston Medical History Club will hear Norman E Himes, PhD, of Colgate University, Hamilton N Y, review the medical history of contraception, December 17—At a meeting of the Massachusetts Society for Mental Hygiene in Boston, November 23, Dr Lawrence K Lunt Concord, will speak on "The Problem of the Psychoneuroses," and Payson Smith, state commissioner of education, "Teaching Teachers Mental Hygiene"

Courses on Intelligent Living—A course on intelligent living and one on the adjustments of normal youth opened in Boston, November 9 and October 9, respectively, under the auspices of the division of university extension of the state department of education and the Massachusetts Society for Mental Hygiene Lecturers in the course on intelligent living include the following physicians

Henry B Elkind Society and Mind
Joseph Pratt The Body and the Mind
Clarence M Hincks New York Mental Health
Clarence A Bonner Danvers Habit Patterns
Karl M Bowman How Man Escapes
Abraham Myerson Fears
Austin Fox Riggs Stockbridge Intelligent Living
Martin W Peck Psychotherapy

Dr Douglas A Thom gave the first four lectures on adjustments of normal youth, and other speakers in this series include Drs Henry B Elkind and Samuel W Hartwell, Worcester

MISSOURI

Neuropsychiatric Meeting—The Missouri-Kansas Neuropsychiatric Society held its annual meeting in Kansas City October 6, with the following physicians taking part in the program

Lyle L Woodfin Osawatomie Kan Insanity in Kansas
Raymond C Fogley Fulton Mo Prevention of Insanity
Ned R Smith Tulsa Okla Mental Disease A Challenging Problem for Medicine
George W Forman St Joseph Psychosis Accompanying Nephrosis
Howard C Curtis, Wichita Mental Conditions Following Brain Injuries
Thomas L Foster Larned Kan, Experience with Diathermy Treatment of Dementia Paralytica Over a Period of Two Years
John M Dunsmore St Joseph Diagnosis in Neuropsychiatry
Daniel V Conwell Halstead Kan Possible Neuro-Endocrine Factor in Intermittent Claudication and Thrombo-Angiitis Obliterans
Myron S Gregory Oklahoma City Paranoia and Paranoid Thinking
Malcolm A Bliss St Louis Nutrition as a Factor in the Social Recovery of State Hospital Patients
Tom B Throckmorton Des Moines The Role of Observation in Neurologic Diagnosis
Ernest Sachs St Louis The Mental Changes That May Occur in Cases of Brain Tumor
Gustave W Dishong Omaha The Significance of Nervousness in Childhood
Guy F Witt Dallas Texas Subconscious Defense Reactions and Their Relation to Organic Disease
Sidney I Schwab St Louis The Use of the Freudian Concepts of the Neuroses by the Neurologist and Internist
Andrew H Woods Iowa City The Contribution of Medical Science to Law

In addition to these papers there was a symposium on encephalitis presented by Drs Elmer T McLaughlin, Jefferson City, Frank Garm Norbury, Jacksonville Ill George Alexander Young, Omaha, and Edward C Rosenow, Rochester, Minn

New County Societies—During recent months the Lincoln County and Dallas-Hickory-Polk County medical societies have been organized in Missouri There were twelve charter members for the former and sixteen for the latter Officers for Lincoln County are Drs William P Smith Troy, president, Harold S Harris Troy vice president and Joseph J Allevato, Winfield secretary The speaker for the November meeting

was Dr Charles H Neilson, St Louis, on pneumonia. The Dallas-Hickory-Polk society named Dr Albert S Johnston, Wheatland, president, and Dr Joseph L Johnston, Wheatland, secretary. After having been inactive for several years, the Perry County Medical Society was reorganized in Perryville, October 11, with Drs Oscar A Carron, Perryville, president, Wade H Abernathy, Menfro, vice president, and Jerome J Bredall, Perryville, secretary.

NEBRASKA

District Clinical Assembly—The eleventh and twelfth councilor districts of the Nebraska State Medical Society held a joint clinical assembly at North Platte, November 6-7. Drs Adolph Sachs and Benjamin C Russum, Omaha, conducted a heart clinic and Dr Karl S J Hohlen, Lincoln, presented a film showing methods of diagnosing intracranial injuries. Speakers were Drs Albert L Cooper, Scottsbluff, on "Sexual Neuroses as Problems in General Practice", Arthur L Miller, Kimball, "Medical Economics", A D Dunn and William P Wherry, Omaha, "The Problem of Sinusitis", Roy W Fouts, Omaha, "Fractures of the Femur", Floyd S Clarke, Omaha, "Modern Practical Infant Feeding", and John deJ Pemberton, Rochester, Minn., "Goiter", and Boyd Gardner, DDS, Rochester, Minn., "Interdependence of Medicine and Dentistry."

NEW YORK

Society News—Drs John H Gutmann and Albert Vander Veer 2d addressed the Medical Society of the County of Albany, November 15, in Albany, on "Mortality Statistics in Acute Appendicitis" and "Rupture of Abdominal Aneurysms," respectively. Drs John M Swan, Rochester, and James I McKenna, Troy, among others, addressed the Medical Society of the County of Washington, Hudson Falls, October 5, on "Early Diagnosis of Cancer" and "The Mind, Its Origin, Growth and Decay," respectively. Drs John A Spengler, Geneva, and Ross L Herold, Willard, addressed the Seneca County Medical Society, October 19, on "Eye Fundus Changes in Systemic Disease" and "Chronic Encephalitis Lethargica," respectively. Dr William J Hoffman, New York addressed the Schoharie County Medical Society, Cobleskill, October 10, on early diagnosis of cancer. Dr Nathan B Van Etten, New York, will address the Westchester County Medical Society at its annual meeting in White Plains, November 21, on "An Economic Prospect for the Physician." Drs Herman G Weiskotten, Edward C Reifstein and William A Groat presented papers on pernicious anemia at a meeting of the Syracuse Academy of Medicine October 17.

New York City

Sir Robert Jones Lecture—Dr Melvin S Henderson Rochester, Minn. will deliver the fourth Sir Robert Jones Lecture at the Hospital for Joint Diseases, November 23, on "Surgical Conditions of the Knee Joint."

Medical Program Before Electrical Society—Members of the New York Electrical Society were guests of Columbia University Medical Center, November 15, with the following staff members as speakers on a program, which followed inspection of the buildings:

Dr Frederick Tilney, Medical Problems in Delinquency
Samuel R Detwiler, Ph D, Modern Experimental Methods of Studying Development and Growth
Dr Frederick B Thinn, Radium Poisoning
Dr Theodore F Zucker, Vitamin D Milk
Dr Edward L Howes, Strength Measurements of the Healing Wound

Joint Pediatric Meeting—The Philadelphia Pediatric Society, the New England Pediatric Society and the pediatric section of the New York Academy of Medicine met jointly at the academy, October 21. The program included the following speakers:

Dr Eugene F Du Bois and James D Hardy, Ph D, Heat Loss by Vaporization and Radiation
Dr William H Park, A Consideration of the New Preparation of Diphtheria Toxoid
Dr Alfred F Hess, New York, A Clinical Investigation of the Development of Caries in the Deciduous and Permanent Teeth
Drs Leonard T Davidson and Katharine K Merritt, Prophylaxis of Rickets with Viosterol in the Premature Infant
A Study of the Clinical Chemical and Roentgenologic Findings
Dr Ade T Milhorat, Creatine Metabolism in Muscular Disease
Dr Anna S Topper, Basal Metabolism in Children with Splenomegaly

Dr Park's Retirement Deferred—Dr William H Park, director of the Bureau of Laboratories of the New York City Department of Health, who will reach the age for retirement from the city service, December 30, will be retained at his post for two years. The New York *Herald Tribune* reports. According to the municipal pension system city employees who reach the age limit of 70 years but who are physically

able and competent to continue their work may apply to the board of estimate for a two year continuance and these requests may be renewed until the applicant reaches the age of 80. Few such applications have been granted recently and those only for six months, it was said. A petition circulated to retain Dr Park, who has been in the department for forty years, called attention to his pioneer work on diphtheria and his present research on poliomyelitis, tuberculosis and cerebrospinal meningitis. Dr Park also directs the preparation of antitoxins, serums and vaccines, and supervises laboratories for diagnostic tests and analysis of milk, water and shell fish.

NORTH CAROLINA

District Meeting—The Fifth District Medical Society of the State of North Carolina held a meeting at State Sanatorium, October 26, with the following speakers: Drs James K. Hall, Richmond, Va., "A Consideration of the Individual and the Environment", James D Highsmith, Fayetteville, "Common Bile Duct Obstructions", William B Dewar, Raleigh "Anemia," and Oren Moore, Charlotte, "New Procedures in Gynecology and Obstetrics."

OHIO

Graduate Course on Endocrinology—Allan Winter Rowe, Ph D, Boston will conduct the eleventh graduate course of the Academy of Medicine of Toledo and Lucas County in Toledo, November 22-24, on endocrine disorders. Dr Rowe will discuss differential diagnosis of endocrine disorders, non endocrine disorders simulating endocrinopathies, association of endocrine disorders with problems of human fertility and with problems of behavior and personality, and the individual endocrine glands.

Society News—Dr George R. Minot, Boston, addressed the Cleveland Academy of Medicine, November 17, on "Anemia—Etiology and Treatment."—Dr Charles A Doan Columbus, was the guest speaker at a meeting of the Summit County Medical Society, Akron, November 7, on "The Role of the White Cell in Disease."—Drs Robert E Cumming and Hans A Jarre, Detroit, were speakers at the meeting of the Academy of Medicine of Toledo and Lucas County, November 3, on "Urinary Tract Infections," with demonstration of serial pyelography. The annual joint meeting of the society with the Toledo Dental Society was held November 10. Speakers were Dr John W Kemper and Chalmers J Lyons, DDS, Ann Arbor on "Oral Conditions of Interest to Both Professions" and "Cleft Palate and Harelip," respectively. Dr Oscar P Klotz, Findlay, addressed the Auglaize County Medical Society, St Marys, October 12, on thrombo-angitis obliterans. Dr Wilbur C Davison Durham N C, addressed the Mahoning County Medical Society, Youngstown, October 26, on intestinal diseases of childhood. Dr Plinn F Morse, Detroit will address the Cincinnati Academy of Medicine, November 20, on "The Parathyroid Gland."—A symposium on radiation therapy was presented at the meeting of the Montgomery County Medical Society, Dayton November 3, by Drs Harry W Burnett, Henry Snow, Jr, Rudolph J Price, Thomas C Sheridan and Harold H Wagner.

OREGON

State Medical Election—Dr Albert M Webster, Portland, was named president-elect of the Oregon State Medical Society at the annual meeting November 4. Dr William T Johnson, Corvallis, was installed as president and Dr Lendon Howard Smith, Portland, was elected secretary.

PENNSYLVANIA

Society News—Dr Charles L Scudder, Boston, conducted an all day program on fractures for the Erie County Medical Society, Erie, October 9.—Drs Maud L Menten, Pittsburgh and Harold H Finlay, Wilkensburg, and Charles G King Ph D, Pittsburgh, presented a report of "Studies on Susceptibility to and Immunization Against Scarlet Fever" before the Allegheny County Medical Society, Pittsburgh, October 17, and Dr Raymond A D Gillis, Pittsburgh, presented a paper on "Mechanism of Breech Delivery."—Dr David H Boyd Pittsburgh among others, addressed the Pittsburgh Pediatric Society, October 20 on "Treatment of Nephrosis by Intravenous Injection of Acacia."

Philadelphia

Appendicitis Mortality Reduced—A campaign for the reduction of mortality from acute appendicitis in Philadelphia begun in 1928 has resulted in a decrease from 5.97 per cent

of the total number of cases reviewed for 1928-1929 to 344 per cent of those reviewed in 1932, according to a report of the fourth survey in the bulletin of the Philadelphia department of public health Dr John O Bower, who made the survey under the auspices of the department of health, attributes the reduction in part to education of the public to earlier hospitalization, and less frequent administration of laxatives. The campaign emphasized especially the danger of laxatives, with the result that deaths following their use have gradually decreased from 1 in 12 in 1930 to 1 in 20 in 1932.

Society News—Drs Walter Estell Lee and Harold P Totten, among other speakers, addressed the Philadelphia Academy of Surgery, November 6, on primary carcinoma of the bile ducts—Drs Edward J G Beardsley and Hugo Roesler addressed the Philadelphia Medical Examiners Association, November 6, on "Asymptomatic Cardiac Enlargement" and "X-Ray Interpretation of Cardiac Enlargement" respectively—Drs Matthew S Ersner and David Myers presented a study of "The Action of Saliva on Blood Coagulation and Wound Healing in Surgery of the Oral Cavity and Throat" before the Philadelphia Laryngological Society November 7—Drs Allan D Wallis and Charles R Tatnall, among others presented papers before the Pathological Society of Philadelphia, November 9, on "Coronary Occlusion with Aneurysm of Ventricle" and "Association of Renal Tuberculosis and Renal Calculus," respectively—Drs Temple S Fay and Ross H Thompson addressed the Philadelphia Neurological Society October 27, on 'Dehydration' and 'Encephalomyelitis Disseminata Following Ascending Neuritis,' respectively.

TENNESSEE

Society News—Drs Thomas L Bowman, Harriman, and John A McCulloch, Maryville, among others, addressed a joint meeting of the McMinn, Monroe, Loudon and Roane county medical societies at Harriman, September 19 on "Bismuth Therapy in Syphilis" and "Arsenical Dermatitis," respectively—Dr Dan V German, Jr, Franklin addressed the Williamson County Medical Society September 12, on nephritis in children—Dr Henry L Douglass addressed the Nashville Academy of Medicine, October 17 on "The Effect of Sympathetic Neurectomy on Interstitial Cystitis"—Drs Marvin H Sandorf and Wallace L Poole addressed the Washington County Medical Society Johnson City, October 5, on lymphogranuloma inguinale and early treatment of syphilis respectively—Drs J H Eugene Rosamond and Arthur F Cooper, Memphis were speakers before the Gibson County Medical Society, Trenton September 25, on infantile paralysis and diseases of the gallbladder, respectively—Dr Edwin L Ellis Maryville addressed the Blount County Medical Society November 9, on acute infections of childhood—Drs Willard H Steele and Samuel H Long presented papers on "Non-surgical Management of Acute Sinusitis and 'Otitis Media,'" respectively before the Hamilton County Medical Society, Chattanooga, November 2.

VIRGINIA

State Medical Election—Dr Francis H Smith, Abingdon, was chosen president elect of the Medical Society of Virginia at the annual session in Lynchburg October 25. Dr Robley D Bates, Newtown, was installed as president and Miss Agnes V Edwards, Richmond renamed secretary. The next meeting will be held in Alexandria.

Society News—The Post-Graduate Medical Society of Southern Virginia and physicians of the fourth councilor district held a joint clinical meeting at Petersburg, October 17. Dr Wilbur M Bowman, Petersburg, discussed "Modern Methods of Birth Control." Dr Frank S Johns, Richmond Extra-Uterine Pregnancy, and a symposium on heart disease was presented by Drs Douglas G Chapman and John M Bailey, Richmond and James L Wood, Jr, University.

WEST VIRGINIA

Personal—Dr Theodore K Oates, Martinsburg, was elected president of the Hospital Association of West Virginia at the annual meeting at Clarkburg October 3—Dr John F Offner, Fairmont has been appointed superintendent of the Weston State Hospital for the insane succeeding Dr Cecil Denham. The Weston institution has been designated a receiving unit for the four state hospitals for the mentally ill.

New Members of Public Health Council—The following physicians have been appointed to the Public Health Council of West Virginia: Drs Samuel W Price, Scarbro; Walter F Vest, Huntington; William C D McCuskey, Wheeling; Benjamin H Swint, Charleston and Morgan T Morrison,

Sutton. Dr Albert H Hoge, Bluefield, was reappointed and W E Minghini, D D S, Martinsburg, was also appointed under authority of a law passed by the last legislature adding a dentist to the personnel of the council.

WISCONSIN

Graduate Course in Urology—The Wisconsin Urological Society is sponsoring a graduate course in urology planned especially for the general practitioner. The course began with an all day meeting at the Milwaukee Athletic Club November 10, when Wisconsin physicians discussed various urologic conditions and Dr Vincent J O'Connor, Chicago was the guest speaker, on "Traumatic Lesions of the Urogenital Tract."

Society News—Drs Reginald H Jackson, Madison, and Frederick A Stratton, Milwaukee, addressed the Milwaukee County Medical Society, November 10 on "Sciatic Pain Due to Chronic Sacro-Iliac Sprain" and "Treatment of Brain Injuries" respectively—Prof Arturo Castiglioni of the University of Padua addressed the Milwaukee Academy of Medicine, November 7, on "The Conception of Infection and Contagion Through the Centuries."

Twenty-Fifth Anniversary Meeting—The Wisconsin Anti-Tuberculosis Association held its twenty-fifth annual meeting in Milwaukee, October 27-28. Among subjects discussed were the need for education in tuberculosis, treatment by surgery and tuberculosis and the child. Speakers included Drs William A O'Brien, Minneapolis; Eben J Carey, Milwaukee, and Robinson Bosworth, Rockford, Ill. At a jubilee dinner Friday evening Dr Mazyck P Ravenel, Columbia, Mo was the guest speaker. Dr J Gurney Taylor, Madison, was reelected president.

Course on Medical Economics—Mr Theodore Wiprud executive secretary of the Medical Society of Milwaukee County, is presenting a series of lectures on medical economics to senior students at Marquette University School of Medicine Milwaukee. The following subjects will be discussed:

Why Consider Medical Economics?
The Physician Should Adopt Business Methods.
The Physician and His Investments
Medical Charity—Where Should It Stop?
Fair Competition Among Physicians
Contract and Panel Practice
Health Insurance
Organized Medicine Meets Current Problems

Presentation of this course is in line with the recommendations embodied in a resolution adopted by the House of Delegates of the American Medical Association at its session in Milwaukee last June, according to *Milwaukee Medical Times*.

FOREIGN

Harben Lectures—Dr Jack Cecil Drummond professor of biochemistry, University of London, delivered the Harben Lectures at the Royal Institute of Public Health, October 9, 10 and 11. His subjects were recent studies of the chemical nature of the vitamins, physiologic function of the vitamins and vitamins in relation to practical problems of human nutrition.

Study of Criminals in Poland—To determine the best methods for the segregation and individual treatment of prisoners the Commission for Criminal Biological Researches of Poland has introduced a test for criminal biologic investigations, which all prisoners whose sentences do not expire earlier than Jan 1 1935, must undergo. The physical, mental, psychologic and social status of the prisoners will be examined with special emphasis on 'social prognostics'. The objective of the plan is to establish a progressive penitentiary system. Supplementary to it the Ministry of Justice has instituted a course in psychiatry, criminology and anthropology for prison medical attendants.

League of Nations Cooperates with China—Dr L. Rajchman director of the Health Organization of the League of Nations Geneva has been sent as a delegate to China for a year to assist the government in coordinating the activities of the league's experts in China and to act as liaison officer for the government and the league. Dr Rajchman's appointment is part of a plan of general cooperation in all technical fields which grew out of an original contact in the field of public health a survey of port health and maritime quarantine conditions made by the league in 1929. The government has asked the aid of the league in its plan of reconstruction by (1) the presence of a permanent liaison officer (2) the aid of experts for particular projects (3) assistance in framing particular projects (4) help in training Chinese technical officers and (5) assistance in finding experts to carry out the reconstruction and to facilitate intercourse between China and other countries.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct 28 1933

The Need for a New Class of Investigators

Sir Thomas Lewis, a leading cardiologist, is director of the Medical Research Council department of experimental medicine at University College Hospital, an appointment unique in uniting experimental with clinical medicine. No one is better qualified to speak of the importance of this union. In the harveian oration at the Royal College of Physicians he pointed out that it was exemplified in Harvey, who had been termed the father of physiology, but that it was more, for his child was clinical science, out of which physiology and pathology were afterward born. Since his time knowledge had grown, and where there had been one science many had sprung up. There was need to guard against the obsession of recent years that useful discoveries were purely the prerogative of laboratories. The proper practice of medicine rested on a tripod consisting of studies of the living in health and in disease, studies of the dead, and correlated studies of the lower animals.

A great need today was a group of men primarily clinicians but accustomed by training and daily experience to wrestle with scientific problems, men who, in place of relatively complete knowledge of some laboratory science, had in the first place intimate acquaintance with the relevant diseases as seen in living man who had also acquired sufficient knowledge of related physiology and pathology to enable them to grapple with the problem in detail and in its wider aspects and to drive successfully to a practical goal. Such work was not the type to which those busily engaged in practice could give themselves in leisure hours with success. If this project was to be accomplished, it would be necessary to set free men with aptitude for the work, to form a phalanx of trained clinicians who could bring clinical science to a new pitch of scientific efficiency. Clinical science should lead the medical science of the future as it did in the past.

Exploiting the Deaf

In the annual report of the National Institute for the Deaf attention is called to considerable success achieved in protecting the deaf against the purchase of unsuitable aids to hearing, which are extensively advertised. Increasing numbers of the deaf consult the institute before negotiating for such aids, and a growing number of journals now decline advertisements from firms who are not willing to agree to the conditions for entry on the institute's list of approved firms. These conditions are that the most suitable aid indicated by the conditions of the client, whether electrical or mechanical, will be recommended, and that, if no aid appears likely to help, the client will be informed. Further, in the event of the purchaser's being dissatisfied with the hearing aid, a refund will be made, less a sum for expenses. Benefit societies and other bodies who assist their members to obtain aids to hearing are refusing such help unless the firm dealt with accepts these conditions. The report states that the deaf have been seriously exploited under the guise of sympathy and the pretense of help in circulars from certain firms, who persuade even those who are extremely deaf to purchase their instruments and who refuse any final adjustment even when the instrument proves to be of no service.

The Earliest Remains of Man

What are claimed to be the earliest remains of man have been discovered by the East African archeological expedition and are on view in the British Museum, with specimens of

the associated fauna and of stone tools. At a meeting at the Royal Anthropological Institute, Dr L. S. B. Leakey, leader of the expedition, showed a mandible found at Kanam, which belonged to the beginnings of the Lower Pleistocene or even the Pliocene period. In many characters the type did not differ from primitive *Homo sapiens*, but roentgen examination of the roots of the molar and premolar teeth showed that it should be separated from the species *Homo sapiens* and rank as a new species of the genus *Homo*, for which he proposed the name *Homo kanamensis*. He regarded the new species as a true lower Pleistocene ancestor of *Homo sapiens*. It was at least as old as its distant cousins *Pithecanthropus* from Java, *Sinanthropus*, from near Peking and *Loanthropus*, found in England. While these formed genera distinct from the line of modern man, *Homo kanamensis* belonged to his genus and formed the species nearest related to him. He had a pronounced chin, and the arrangement of his teeth, as well as their size agreed with those of *Homo sapiens*.

The expedition also found, at another place in East Africa, Kanjera, ancient human remains but more recent than the Kanam specimen. Skulls were found that were established as belonging to the middle Pleistocene and are held to be the oldest remains of *Homo sapiens* yet discovered. The skulls were larger and thicker than those of modern man and their height was low in relation to the length. They had not the pronounced brow ridges that belong to the types of man dissociated from *Homo sapiens*. They were a generalized and rather primitive example of our own species and an advance over the Kanam man.

The stone implements found were of the highest significance. With the Kanam man were found crude implements, roughly chipped, with the Kanjera man a more highly developed type of the coup de poing, or hand ax. From another East African site, Oldoway, was found previously a series of stratified deposits which showed for the first time an unbroken and continuous series of the evolution of this hand ax culture, into which the stone implements of Kanam and Kanjera fitted. Dr Leakey suggested that East Africa was near the center of the development of this culture, if not the actual center. On the other hand, the forms of man characterized by great brow ridges was associated with the flake culture of stone implements.

Sudden Death of Donald J. Armour

Mr Donald J. Armour, senior surgeon to the National Hospital for Nervous Diseases and consulting surgeon to the West London Hospital, died at the age of 64 while attending a council meeting of the Medical Society of London, of which he was treasurer. He was apparently in his usual health and had given his treasurer's report and sat down. He was taken suddenly ill and died immediately. The meeting was adjourned. A member of a well known Canadian family and the son of the chief justice of Ontario, he was born in 1868 and educated at the University of Toronto. Subsequently he entered the medical school of University College, London, where he became demonstrator of anatomy and attracted the attention of Sir Victor Horsley, the pioneer of neurologic surgery in this country, and assisted him in his operations. He was appointed assistant surgeon to the National Hospital for Nervous Diseases and also surgeon to the West London, Italian and Belgrave hospitals. Though an energetic general surgeon, he made his reputation mainly as a neurologic surgeon, on whom the mantle of Horsley had fallen. He delivered the Arris and Gale lectures at the Royal College of Surgeons on the surgery of the gasserian ganglion and gained the Jacksonian Prize for his essay on morbid growths of the vertebral column and spinal cord, in special reference to their amenity to operation. As Hunterian professor he lectured at the college on the surgery

of the spinal cord and its membranes. He contributed many papers to the medical journals on head injuries, the surgery of the nervous system and abdominal surgery. For the "System of Treatment," edited by Latham and English, he wrote the articles on the surgical diseases of the scalp, the cranium, the meninges, the brain, and the spinal column and cord. During the war he was specialist to numerous military hospitals. He leaves a widow, one son and two daughters.

Increased Tax on Imported Insulin

England has been foolish enough to abandon her system of free trade. This is due to the fact that the dominant political party does not understand economics or, what is nearer the truth, the leaders don't want to understand economics as this would deprive them of their pseudopatriotic protectionist propaganda. The list of taxed commodities is constantly being extended at the request of interested persons. But the request to increase the present 10 per cent tax on imported insulin to 33 per cent has raised an outcry in the *Star*. Why inflict hardship on poor people who are ill? Their insulin supply already often costs \$3 a week. The *Star* publishes a number of letters from physicians protesting against the proposed increase. One states that he has known patients to halve the dose prescribed, because they could not pay for the full one. Another point is that a large number of diabetic patients cannot buy insulin at all, they obtain it by charity or at the expense of the state. Increased cost means depletion of charitable funds, already too small, or increased burdens on already overburdened taxpayers.

PARIS

(From Our Regular Correspondent)

Oct 4, 1933

Organization of a Center for Convalescent Serums

Since it has been recognized that the serums of convalescents have in some infectious diseases a preventive and curative value, efforts have been made to establish centers where supplies of convalescent serums may be kept on hand for use in case of epidemics. It has not been found easy to organize such a center. In children's hospitals, one can obtain serum from convalescents from measles, pertussis, scarlet fever and bronchopneumonia, although it is dangerous to take too much blood from young patients recovering from such diseases. The small supply thus secured is not sufficient to supply the physicians of the city who require serums for their clientele. A model organization has been perfected, in the children's clinic at Strasbourg by Professor Lowenberg, the details of which he recently announced. There is provided a stock of convalescent serum for measles, scarlet fever and poliomyelitis. In this connection the discovery of the potency of the serum of adults who have been in contact with poliomyelitis patients is important. The serum of many physicians and nurses can be employed after its immunizing value has been demonstrated by inoculation in the monkey. Lowenberg gave an inventory of the serums that his hospital possessed. Of measles serum about a liter was collected last year. Blood was taken from more than thirty patients and there were about twenty requests for serum. The stock of serum of scarlet fever patients reached 3.5 liters. Blood was taken from patients in thirty-five instances in securing this supply, and forty-one requests for serum were met. The stock of serum for poliomyelitis was derived chiefly from adults who had the disease during the epidemic of 1930. Nearly 4810 cc was collected. 515 cc was placed at the disposal of physicians requesting it. Thirty-eight samples of blood were required to produce this amount of serum. Seven requests for serum were satisfied. Lowenberg has not yet been able to collect all the necessary evidence with which to determine the final results in cases treated with serum but,

in all the cases in which a report has been received, the results were regarded as favorable, particularly as regards the scarlet fever serum in a number of grave cases.

Insects from the Near Orient

At a session of the Societe de pathologie exotique, Tanon and Neveu announced the discovery of a new species of cockroach previously unknown in Paris. Speed in methods of travel has increased, in late years, the geographic distribution of many insects. Some species that have been restricted heretofore to Asia or Africa are beginning to appear in Europe. Three years ago the hygienic services of the police were compelled to deal with houses invaded by ants from Indo China. More recently a building became infested with ants from Argentina, and a few weeks ago, a house was invaded by cockroaches that were different from any species known in France. The new species is called *Sapella supelictum*, which is found normally in the Mediterranean Orient, and especially in Egypt, Palestine and Syria. An inquiry revealed that the apartment had been inhabited by a Syrian family whose baggage contained cockroaches. The insects found in the radiator coils favorable thermic conditions for their reproduction. They are difficult to get rid of. The use of insect powder with a sodium fluoride or pyrethrum base, and spraying of pyrethrum powder with an electric atomizer do not destroy the insects. The question of the best method of destroying these insects has been considered by several members of the society. Mr. Navellier recommended the use of "rough-on-rats" (arsenic). Mr. Galliard reported that his laboratory of parasitology was invaded by cockroaches. Arsenical salts were found to have a sufficiently destructive action.

The Maggot Treatment of Wounds

The presence of the larvae of flies on wounds was regarded in ancient times as favorable to recovery. The surgeon Larrey, during the Napoleonic campaigns in Syria and Egypt, made such observations, but his remarks were received with incredulity. American investigators have recently developed this method. Professor Brumpt, during a recent visit to the United States, observed the good results secured, which he studied carefully. He plans to introduce this method in France. It is therefore necessary to select the larvae with great care. Mr. Brumpt has established a breeding place in Paris, in the laboratory of natural history, which is under his direction at the Faculte de medecine. In a communication to the Academy of Medicine he described the technic that he employs. The larvae liquefy the organic products, on which they live, by means of proteolytic ferments. Their products of secretion make alkaline the wounds primarily acid, and thus diminish considerably the number of microbes. Sterile extracts of larvae also may produce, in some cases, satisfactory results.

Dedication of the Hôpital de Grange-Blanche

The immense Hopital de Grange Blanche, at Lyons, has been, in part, completed. Part of the funds for the building of the hospital were supplied by the Rockefeller Foundation. Mr. Edouard Herriot, who in spite of other important political duties was mayor of Lyons for twenty years seized this opportunity to erect a great hospital. He brought together on one site all the hospital services designed to replace the various old hospitals scattered over the city and at the same time moved to this site the whole Faculte de medecine, which was much cramped in its old quarters in the down-town section. It is therefore a gigantic city of medicine—comprising hospitals and institutions of instruction—that has been erected at the gates of the city of Lyons since the enormous space necessary (17 hectares, or 42 acres) could not be procured in the center of the city. Special means of transportation have been created to connect the new city with the old. The professors and the

students, to tell the truth, complain about the great distance, as they lose much time going back and forth. A large dormitory has been added, but that does not satisfy the many students who live at home, in Lyons, at less expense. The new hospital is composed of separate pavilions each of which constitutes a complete hospital in itself, with a surgical department and two medical departments. There will be twenty-two pavilions, thirteen of which will have the complete equipment of a clinic. The hospital will have a total of 1,544 beds. The science buildings, the laboratories, the maternity, the nurses' training school and the school for visiting nurses for social hygiene, and the administrative departments will occupy special buildings. As a number of pavilions were ready to function and to receive patients, the formal opening of the Hôpital de Grange-Blanche took place on the national holiday, this year.

BERLIN

(From Our Regular Correspondent)

Oct. 2, 1933

Reorganization of the Krankenkassen

In several recent letters, the reorganization of the federal health insurance system of Germany has been considered. Now the federal ministry of labor, which has control of the entire health insurance system, has issued a circular letter to the governments of the German *lander*, from which an idea of further reorganization may be derived. There were a number of unpleasant, if not injurious, practices that needed to be eliminated. In this letter the point is stressed that the selection of personnel, particularly as regards the more important posts, is to be based on objective and not personal points of view. Candidates must be adapted to the work. In the event of friction arising among the personnel, the possibility of transferring or exchanging appointees should be considered. The standing and the compensation of the confidential physician continue to be assured by suitable regulations, likewise his impartiality and independence of action remain protected. The provisions bearing on his status must be strictly observed in order to protect the well established interests of the insurance corporation as a whole. With a view to economy of administration, a merger of *kranken-kassen*, especially of *kranken-kassen* whose headquarters lie in the same insurance zone, is recommended, but, for the present a merger of *kranken-kassen* with entirely different characteristics should be avoided, or a mere administrative merger can be effected. Every measure should be tested as to its feasibility and its economic advisability. The members of the various administrations are individually responsible for the conduct of affairs. The preparation in advance of a sufficiently detailed budget is needed. The goal that must be kept constantly in mind is such an economical administration as to make it possible to lower the insurance premiums paid by individual members of the *kranken-kassen*. The question as to whether it is advisable, under certain conditions, for the *kranken-kassen* to produce and dispense directly various medicines and bandage material, without taking account of the pharmacists, requires special and careful consideration, the decision presupposing the weighing of the interests of the *kranken-kassen* against the interests of the liberal professions. It should be borne in mind that while it is doubtless true that the *kranken-kassen* save considerable money by manufacturing certain items of their needs, the pharmacists feel that their interests are thereby damaged and emphasize that their preservation constitutes an important factor of the public health service. In considering the feasibility of economic measures, the administrations of the *kranken-kassen* must not attach sole importance to present conditions but must show proper appreciation of future conditions and the rightful interests of the insured. Especially with respect to the procuring of radiologic

and other therapeutic apparatus, it should be considered that the development of the service of confidential physicians will naturally entail a wider use of diagnostic agents. A hasty abandonment of such agencies may lead to the wasting of public property, to the damaging of honorable interests and to a marked increase of the burden laid on the insured. It is brought out in this document that the factories owned and managed by the administration of the *kranken-kassen* have their justification, as it is often next to impossible to enter into suitable arrangements with the various occupational groups. When such conditions prevail, the members of the *kranken-kassen* as a whole can hardly be expected to assume unnecessary burdens in favor of minorities.

Effects of Irradiation on Excretion of Sex Hormone

During the course of their studies on sex physiology, Professor Döderlein, gynecologist of Munich, and the pathologist Professor Borst recently discovered a new general effect of irradiation. In the Döderlein Radiologic Institute, all patients with uterine cancer have, since 1913, been subjected solely to combined roentgen and radium treatment. Patients with cancer of the genitalia excrete in the urine, in 81.8 per cent of the cases, the sex hormone of the anterior lobe of the hypophysis. Since implants of cancer tissue never contain this sex hormone, the formation of this substance in cancer patients takes place evidently in the anterior lobe of the hypophysis. It is common knowledge that young women who have undergone ovariectomy (through either a surgical or a radiologic operation) excrete for a short time after the intervention, in the urine the sex hormone of the anterior lobe of the hypophysis. Ovariectomized women and women with genital cancer appear, therefore, to act in the same manner with respect to the excretion of the sex hormone of the anterior lobe of the hypophysis. To ascertain the significance of the excretion (following irradiation of cancer) of the sex hormone of the anterior lobe of the hypophysis, Döderlein and Borst selected for their investigations elderly women who had not menstruated for many years. The urine of these women was examined as to the sex hormone content before and after the combined roentgen and radium treatment. The authors ascertained that, in such cases, before the irradiation the sex hormone was excreted in only 63.16 per cent but after the irradiation in 100 per cent of the women. The investigators assumed, therefore, that therapeutic roentgen and radium treatment always exerts a distant influence on the prehypophysis and stimulates it to increased secretion of the sex hormone of the anterior lobe of the hypophysis. This assumption finds confirmation in the observation that men affected with cancer of various organs frequently excrete in the urine, following local radium irradiation, increased quantities of the sex hormone of the prehypophysis.

Traffic Accidents

According to a report of the federal bureau of statistics, 22,835 fatal accidents occurred in Germany in 1931, of which 7,526 were traffic accidents. Owing to improvements in traffic arrangements, recent years have shown a decrease in fatal accidents. An accident of average severity can be assumed to require the expenditure of 4,500 marks, so that the total damage from the financial point of view alone is considerable. As to the causes of accidents, technical errors or weaknesses of vehicles and faulty conditions of the roads play a comparatively small part. The main causes concern the drivers and the pedestrians themselves.

The German Academy of Scientists in Halle

The Kaiserlich Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher has come more to the front through the admission of many new members. The academy was founded in 1652 when four physicians in the Bavarian city of Schwem

furt formed a group with the object of promoting research in the natural sciences. The academy received imperial recognition and was gradually accorded numerous privileges customary in the middle ages but which are now no longer held. It is not a state academy, after the manner of the large academies in various countries. It has a department of mathematics and the natural sciences and a medical department, which departments are divided into a number of special groups. Regular sessions are held once a month. It has its own research fund, which is used for the publication of *Nova Acta Leopoldina* and for the promotion of research. For a number of years, Professor Abderhalden, of the department of physiology of the University of Halle, has served as president. Since 1904 the academy has had its own building, with a library containing about 100,000 volumes.

VIENNA

(From Our Regular Correspondent)

Oct 4 1933

The Ever Widening of Child Welfare

The first report of the activities of the municipal department of child welfare, just published by the public health service of Vienna, contains many items of interest to the medical profession. It describes the work of the welfare department for mothers and infants, and the care of children and young persons who lack normal adjustments. The department of child welfare, created in 1917, comprises fourteen main districts with 234 local centers each of which is in charge of one female senior social worker and a female assistant social worker. In 1931-1932, no fewer than 162,850 families with 260,040 children were visited by these social workers. A children's placement center has been established, which subjects to a medical examination and an educational test all children that come under the care of the city of Vienna and thereupon places them in a hospital or in the care of a private family. In 1931-1932, 7,960 children were so placed. Also the organization and development of the kindergartens were taken over and so to speak, monopolized by the municipality of Vienna. Vienna has control of 349 kindergartens. In many cities the kindergartens are private undertakings. Last year, 19,423 children received full supervision and maintenance in these municipal kindergartens, as against ninety-three kindergartens with 4,700 children in 1913. Only 15 per cent of the children contributed small amounts toward the cost of their meals. Aid in the care of the health of the oncoming generation is given also in the *Kinderknoten* which are designed mainly for children who have no supervision at home during the day. About 20,000 children aged 6-14 years were cared for in this manner during the last fiscal year. Another interesting feature is the "Säuglingswische-Aktion," which with the aid of the city of Vienna, provides gratis a baby's outfit for all new born children whose mothers are without funds. Last year, 10,708 packages of infants linen were thus distributed. One of the most important departments of the bureau of child welfare is the consultation service for mothers, of which there are thirty-five, in which 248,523 children were examined last year and their mothers advised as to their care. In addition there are two consultation centers for prenatal care which are in charge of gynecologists and are available to every woman. Here is located also the mothers' aid service the chief object of which is the combating of congenital syphilis. There are special rewards for mothers who will nurse their children (40 Austrian shillings per child annually). Another branch of the bureau of child welfare is the free lunch service for school children. In sixty-seven public schools more than 12,000 children received daily a warm substantial meal. Mention should be made also of three further branches of the bureau of child welfare the consultation service on child training the hospital social service and the

outing service. In 1931-1932, the outing service provided 25,000 children with a summer outing of from four to eight weeks.

Recent Regulations for Animal Experimentation

It is not likely that a general renunciation of experiments on living animals will ever be brought about. Remedies can be studied and tested only on living organisms, and the standardization of many therapeutic agents can be effected only by the use of animals. Animal experiments must frequently be used for instruction purposes. However, every serious-minded investigator must be conscious of his accountability for his work on animals, in other words, he must exercise self-discipline. The establishment of regulations pertaining to animal experimentation has been repeatedly attempted and desired by physicians, possibly for the reason that antivaccinationists are inclined to exaggerate and to display ill will. Their crusade against scientific medicine in favor of treatment by so-called natural methods has led, in some countries, to the enactment of laws directed against vivisection. Recently Austria's Society for Prevention of Cruelty to Animals has submitted to the government a plan for legislation, which is not unreasonable. The proposals cover the following points. Only scientific public institutions, and institutes and laboratories that are under state supervision, shall be permitted to do animal experiments. The director of an institution must be held personally responsible for all experiments performed in the institution. Vivisection may be used for instruction purposes only when no other method, as, for example, an instruction film, is available. Operations on animals may be performed only by physicians and veterinarians. With the permission of the director of an institute, and under his responsibility, students who have been pursuing their studies at least three years may be allowed to perform such experiments. During the whole duration of the intervention, the animal must be protected against pain by general or local anesthesia. The same animal may not be used for vivisection more than twice. These criteria do not differ materially from the "principles pertaining to the performance of scientific animal experiments," which the Schweizerische medizinisch-biologische Gesellschaft established a short time ago. In the *Mitteilungen der Wiener Aerztesammer* for October, 1933, this problem is briefly discussed.

The Annual Meeting of Alpine Physicians

In Baden, near Vienna, the ninth Convention of Alpine Physicians October 2-3, attracted surgeons and internists who practice in the Alpine regions, chiefly, Styria, Tyrol, Salzburg and Austria, but also North Italy, Yugoslavia, Germany and Switzerland. About 400 men and women attended.

DISEASES AND INJURIES OF THE PANCREAS

The first topic on the program was "Diseases and Injuries of the Pancreas." Prof. Dr. Walzel of Graz presented the surgical, Professor Berger of Graz the pathologic, and Dr. Hamperl the internist's side of the question.

THE BANG BACILLUS IN MAN

The second topic was "Infection with the Bang Bacillus in Man." The importance of this disease has been recognized only in recent years. The condition is so common in the Alpine regions that the ministry of public health found it necessary to supply the medical profession with a bulletin containing information on the etiology, the course and the prophylaxis of the disease. Questionnaires have been sent to the local health authorities to secure an insight into the incidence of the disease in Austria. Prof. Dr. Lauda of Vienna discussed the symptoms, treatment and differential diagnosis while Professor Russ discussed the bacteriologic and the serologic aspects. Professor Schnurer of the college of veterinary science in Vienna, presented an account of the infection in animals.

THE PROBLEM OF ABORTION

The third topic was "The Problem of Abortion." Professor Stigelbauer of Wiener-Neustadt gave statistics on abortion in Austria. Professor Weibel of Vienna spoke on therapy, Dr. Hies of Klagenfurt on the technique of artificial abortion, and Professor Zacherl of Innsbruck on the late sequelae of abortion. A large number of addresses were delivered on these three main topics. The session closed with social events, excursions and concerts. There was an instructive exhibit of medical and chemical preparations and apparatus.

Sudden Death of Professor Herrschmann

Professor Herrschmann, an eminent court psychiatrist, died suddenly of angina pectoris, aged 44. While serving as assistant physician in the Vienna Psychiatric Clinic, he wrote many interesting articles, among which were "Laws of Marriage in Their Bearing on Mental Patients" and "Accountability." During the codification of the new Austrian penal code, he was summoned as an authority in drafting the chapters on the status of mental patients. Other well known studies are "Chronic Barbitol Poisoning and Syphilitic Psychosis," and a large number of neurologic studies on the minute structure of the brain.

AUSTRALIA

(From Our Regular Correspondent)

Sept. 11, 1933

The Fourth Australian Cancer Conference

The mortality rate from cancer has increased in the past year. For 1931, the deaths from cancer in the commonwealth per hundred thousand of mean population were 105 for males and 97 for females. These rates showed a considerable increase over the previous year. Of the total deaths from all causes in Australia the proportion due to cancer continued to rise and in 1931 one death in every nine in males and one in every eight in females had been caused by cancer, this proportion being the highest yet registered in the commonwealth. The population of Australia during the past fifty years has been changing considerably in composition as regards the age groups. In 1881, only 2.5 per cent of the population lay in the age group of 65 years and over. In 1931, 6.03 per cent of the population lay in this age group. Consequently, a larger number of persons are living into what is known as the cancer age. It was found also that in that age group the cancer mortality rate was rapidly increasing. On the other hand it was found that in the age groups below 65 years, an actual diminution in the cancer mortality rate had become evident in recent years, the rate for 1931 being below that for 1911 and 1921. This diminution in the cancer mortality rate for the age groups under 65 years might be considered a favorable sign and might with justification be attributed at least partly to the efficacy of modern treatment. In elderly persons cancer comes more as a terminal event, cure is less likely to occur and the mortality rate is consequently but little affected by treatment.

The steady rise in the cancer mortality rate appeared mainly in relation to carcinoma of various organs. The mortality rate for sarcoma was at practically the same figure it had been twenty-five years before.

The mortality from cancer of the tongue in males, although the year 1931 showed an increase over the previous year, still remained at a lower level than it had been a decade or two previously. In females, on the contrary, the mortality rate (although cancer of the tongue was relatively rare in females) was higher in 1931 than at any previous time in the past twenty-five years.

Although in cancer of the tongue in males the tendency of recent years had been toward a diminution in the mortality rate, the mortality rate had increased in all other sites of

cancer, with the possible exception of the skin. In respect to some regions, however, the mortality rate was increasing much more rapidly than in others. Thus, in females the mortality rate from cancer of the breast had increased more rapidly than that for cancer of the female genital organs. In 1908 and 1931 the respective rates per hundred thousand of mean population were in the female genital organs, 15.3 and 20.9, an increase of 36 per cent, and of the female breast, 10.2 and 18.6 or 82 per cent increase.

The region in which the most rapid increase in the mortality rate from cancer had occurred was the digestive tract. Here the increase since 1908 had been 146 per cent in males and 120 per cent in females.

The mortality rate per hundred thousand of mean male population in 1908 was 25.2 per cent, in 1930, 49.7, and in 1931, 62.0. For females the rates for the same years were 20.1, 35.9 and 44.3 per cent, respectively. In males in 1931, one death in every 17 deaths from cancer was attributed to cancer of the digestive tract, in females the proportion was one in 22.

In cancer of the skin the mortality rate, which until 1918 rose steadily, had since shown a distinct though fluctuating tendency to fall. In 1908 the rate in males was 3.1 per hundred thousand of mean population. In 1918 it had risen to 5.0 per hundred thousand. In 1930 it had fallen to 4.0 and in 1931 to 3.5 per hundred thousand.

Infant Welfare in Australia and New Zealand

Owing mainly to economic conditions, the downward trend of infant mortality rates for 1932 have been arrested and in a few instances have risen slightly.

The state of affairs can be appreciated from the following table:

Annual Infantile Mortality per Thousand Births

Year	Queensland	New South Wales	Victoria	South Australia	West Australia	Tasmania	New Zealand
1928	25.5	54.9	55.6	47.5	48.1	64.0	35.9
1929	46.1	56.6	47.2	40.9	56.2	53.2	34.1
1930	40.2	49.8	46.6	48.4	46.7	50.6	34.5
1931	36.6	43.5	44.5	36.4	41.5	46.0	32.2
1932	40.2	41.0	43.0	36.7	44.6	40.5	33.7

Below are the rates given in five year periods. New Zealand has the lowest infant mortality rate in the world, followed by Queensland and South Australia.

Average Infantile Mortality in Five-Year Periods

Year	Queensland	New South Wales	Victoria	South Australia	West Australia	Tasmania	New Zealand
1913-1917	63.2	68.3	69.8	68.1	65.7	63.4	51.9
1918-1922	59.5	63.6	65.0	59.0	63.7	64.9	46.5
1923-1927	51.1	57.6	59.1	51.2	51.6	53.5	40.5
1928-1932	41.7	49.2	47.4	42.0	47.4	50.9	34.1

The extension of welfare activities has generally been arrested but an interesting development in New South Wales is an airplane baby clinic for service to mothers in isolated centers. This was inaugurated Oct. 5, 1932. Queensland, New South Wales and Victoria have had railway clinics in operation for several years, and they are receiving increasing attention at the sidings.

Results of Radium Treatment

It has now been four years since coordinated Australian wide statistics have been compiled. The number of patients treated at the cancer treatment centers by means of radium or radium combined with other methods up to June 30, 1931, were: sarcoma, 113; carcinoma, 3,526; rodent ulcer, 2,915. A large

number of patients with tumors of doubtful malignancy and with benign tumors had also received treatment. Of the 3,526 cases of carcinoma, 1,731 were classified as operable. Of the patients with operable tumors, 65 per cent were alive and free from symptoms on June 30, 1931, 25 per cent showed local improvement, 3 per cent were known to have died of cancer, and in 8 per cent the patient had been lost sight of and the end result was in doubt. Of 966 patients with inoperable tumors, 14 per cent were alive and free from symptoms and 41 per cent were known to have died.

As regards rodent ulcer, of 2,652 patients whose ulcers were classified as operable, 75 per cent were alive and free from symptoms, 0.2 per cent had died, and in 9 per cent the end result had not been ascertained. Of 167 patients with inoperable and advanced ulcers, 13 per cent were alive and free from symptoms, 56 per cent showed local improvement and 32 per cent had died.

As regards sarcoma of thirty-seven patients with operable sarcomas, 43 per cent were alive and free from symptoms, 38 per cent showed local improvement and 11 per cent were dead. Of fifty-seven patients with inoperable and advanced growths, 9 per cent were alive and free from symptoms, 30 per cent showed local improvement and 65 per cent were dead.

Results of treatment by means of radium and of radium combined with other methods were good in cancer of the skin and of the lips and in operable tumors of the buccal cavity, uterus and breast.

Measurements of X-Rays

With the adoption of the roentgen as the international unit, it was left to the physicists of the national laboratories to construct standard ionization chambers with which the unit could be realized. Although the same basic principles had been adhered to there had been such individuality of design and construction that no two were exactly alike, and on account of these differences it was important to discover how closely the several standards agreed.

A small ionization chamber developed by the United States Bureau of Standards had recently been compared with the standards of Great Britain, Germany, France and the United States. (The design of this ionization chamber had been adopted by the Commonwealth Radium Laboratory in the construction of the Australian standard ionization chamber.) A summary of the results of the comparisons is given in the following table.

International Comparison of the Roentgen

Laboratory	Tube Voltage Kilovolts	Half Value Layer Mm of Copper	Ratio of Unit to Portable Unit
United States	100-110	0.10-1.10	1.000
Great Britain	110-140	0.11-0.50	1.000
Germany	100-180	0.16-1.10	1.0035
France	110	0.25	2.10
(Solomon unit)	140	0.75	2.28
	190	1.00	2.29
	190	1.50	2.30

The agreement between the national standards was as close as might be reasonably expected and was much better than that required for practical calibration purposes. The variation in the value of the Solomon unit with differences in the quality of the radiation emphasized the necessity for a "free air" standard as opposed to the "thimble" type of chamber.

As a result of the experience gained during these comparisons the National Laboratories issued recommendations that should be observed when carrying out comparisons of ionization chambers.

Radium Audit

During the past year an accurate investigation of the commonwealth government's radium was undertaken. As a result of the investigation it was stated that the radium purchased

by the commonwealth government was held in 2,169 containers with a total measured content of 10,035.36 mg of radium. The containers were distributed among thirteen different centers. Of this radium, a total of twenty-five containers with a content of 66 mg of radium had been lost in the four years since distribution was made. This loss was equivalent to 0.65 per cent of the radium over a period of four years, an average of 0.16 per cent annually.

Diploma in Radiology at Sydney University

Following the resolution made at the third conference, the senate of the University of Sydney has prepared details of a proposed course which would occupy a full academic year. The syllabus is as follows:

Part 1 One term (230 hours)

Introductory physics

Special physics dealing particularly with

(a) X rays radium and ultraviolet radiations

(b) The design of X ray machinery

Laboratory practice

Part 2 Two terms (minimum 500 hours)

A Radiography, hospital and clinical practice

B Introductory course to C and D consisting of normal and pathologic cytology and special physiology

C Special pathology of conditions amenable to treatment by radiation

D Radiotherapeutic practice in recognized hospitals including work at clinics

JAPAN

(From Our Regular Correspondent)

Sept 30, 1933

The New Law and the Dispensing of Drugs

The pharmacists have for a long time been making an effort to deprive physicians of the privilege of dispensing their own drugs but in vain. In the new medical laws, which become effective this fall, there is the following statement: "When a physician is requested to write a prescription instead of giving medicine to a patient, he shall write a prescription, so long as it is no hindrance to treatment." This is supposed to be the entering wedge to the division of the dispensing of drugs between pharmacists and physicians. The latter, of course, are not eager for a law of that kind, but public opinion, as shown by editorials in the daily papers, is for the amendment. Pharmacists have increased greatly in number since 1931. The increase in physicians has not been proportionate.

The Canadian Indians and the Japanese

It is a theory in Japan that the Canadian Indians have the same ancestors as the Japanese. Dr. S. Kobata of the Kanazawa Medical College, who attended the Pan-Pacific Science Conference, held in Canada during the summer, remained there four months that he might study this problem. On returning home he reported that, as a result of studying finger prints, blood types and palm lines, he strongly opposes this theory. He says he examined about 500 Canadian Indians and found that 70 per cent of them were of the O type blood group, only three were of the B type and none were of the AB type. The Asiatic races are mostly of the B type and but few are of the O type. Most of the Indians have arch finger prints, and but few have whirl prints which indicates that they are nearer to the white race, their palm lines are characteristic of those of a primitive race. He could not discover any sign of one and the same origin between these two races.

A Prison for Leprous Criminals

The number of lepers who violate the laws amounts annually to more than 100 and how to deal with them has long troubled the authorities. It happened this summer in the Osaka leper sanatorium that twenty-one lepers who had become Bolsheviks were set free by order of its chief, Dr. Murata. As a result of this incident it was decided to establish for the first time

a leper prison, which is to be attached to the compound of the national sanatoriums now in construction in two prefectures. For the releasing of leper radicals, strong censure was given the chief of the sanatorium.

Restriction on Specialties

In a physician's announcement, it is forbidden to advertise his ability or method of treatment, only his specialty is permitted to be shown. The term "specialty" has not been precisely defined. With the increase of so called specialties, some of the announcements have included methods of treatment, consequently, abuses have arisen. The home office, therefore, determined to restrict the number of specialties. In the new medical laws, the following only are to be permitted in physician's announcements: internal diseases, diseases of the digestive organs, diseases of the respiratory tract, diseases of the gastrointestinal tract, diseases of the circulatory organs, diseases of metabolism, neurology (or cerebrospinal diseases), epidemic diseases, surgery, surgical stomatology, splachnosurgery, orthopedic surgery, and diseases genito urinary diseases, gynecology and obstetrics, dermatology, pediatrics, ophthalmology, otorhinolaryngology, radiotherapy (roentgen therapy) and physical therapy. Those who have devoted themselves to other branches which are not among those mentioned are warned. Because their only support is going to be suddenly cut off, they have started a movement against it. One skilled in only a single branch of treatment will indeed be hard hit, for scrofula, rheumatism, alopecia, trachoma and leprosy have been the special fields of work of some. Hereafter these will disappear from the signs of physicians.

The Eugenic Sterilization Movement

The Japan Race Hygiene Society will soon change its incorporation papers so as to enable it to start a eugenics campaign. Prof. Dr. S. Nagai, its chief, says that the society has decided to present a sterilization bill at the next session of the diet, which is expected to arouse much discussion. The bill will go beyond voluntary sterilization in order to rid Japan of unsound hereditary qualities. The details of the bill are kept secret, but diseases incurable even by medicine or punishment are to be governed by this act. As to determining who should be sterilized, an institution is to be established, and in case of opposition an appeal to the judicial court will be allowed. The method of sterilization will be simple and will not be a hindrance to marriage. The whole system will be carefully designed and adjusted to the Japanese nation.

Marriages

WILLIAM H. CHAPMAN, Blythe, Calif., to Mrs. Grace C. Houston of Ripley, in San Bernardino, August 5.

JOHN WINTHROP GAHAN, Medford, Mass., to Miss Regina Carmelita Curley of Milford, September 9.

RICHARD PHILIP HOWARD, Pocatello, Idaho, to Miss Alice Claire Nordin of Baltimore, September 7.

ARTHUR B. BARRETT, Lexington, Ky., to Miss Margaret Baker of Mooresville, N. C., October 6.

JOSEPH THOMAS CADDEN, Philadelphia, to Miss Nellie H. Orkes of Hazleton, Pa., October 13.

JEROME MILLER, Philadelphia, to Miss Beatrice V. Edson of New York, August 15.

ORLN A. BEATTY to Miss Ursula Hargadon, both of Louisville, Ky., September 30.

PAUL NEWTON MORROW to Miss Ellen Harrington, both of Philadelphia, October 4.

CLIFFORD J. STEINLE, Chicago, to Dr. AIDA SALVATI of New York, October 14.

NORMAN OSCAR LA MARCHE to Mrs. A. B. Truesdell both of Detroit, August 15.

Deaths

Robert Calvin Coffey ☉ Portland, Ore., clinical professor of surgery at the University of Oregon Medical School, was killed, November 9, in an airplane accident. Dr. Coffey was born in Caldwell County, N. C., Oct. 20, 1869, and was educated at the Globe (N. C.) Academy and the Kentucky School of Medicine, from which he graduated in 1892. He began practice at Moscow, Idaho, in 1892, and moved to Portland in 1900. In 1908-1910 he was secretary of the Oregon State Board of Medical Examiners and in 1910 he was elected second vice president of the American Medical Association. He was a member and past president of the Oregon State Medical Society, Pacific Coast Surgical Association and the Western Surgical Association, member of the Southern Surgical Association and fellow of the American College of Surgeons. Dr. Coffey was widely known for devising a method of submucous implantation of the ureters into the large bowel for extrophy of the bladder, a method of treatment of gastro-enteroptosis, which came to be known as the "hammock operation," and was the first to remove experimentally the head of the pancreas and to reestablish functioning communication with the intestine; he also devised an operation for cancer of the rectum. He was the owner and chief surgeon of the Robert C. Coffey Clinic and Hospital, the author of a chapter on "Diseases of the Pancreas" in *Binnie's Regional Surgery*, and of numerous articles in various medical and surgical journals. During 1932 Dr. Coffey went abroad to address various medical societies and he was made an honorary member of the French and Italian societies of urology and surgery. He was a genial man with a host of friends and a leader among American surgeons.

Hugh Ratchford Black, Spartanburg, S. C., University of Maryland School of Medicine, Baltimore, 1883, an affiliate fellow of the American Medical Association, fellow of the American College of Surgeons, past president of the city board of health and at one time bank president, aged 76, formerly surgeon to the Spartanburg General Hospital, Spartanburg County Hospital for Colored and the Wofford College Infirmary, formerly medical director and president of the Mary Black Clinic and Private Hospital, where he died October 8 of pulmonary embolism following amputation of the thigh for gangrene.

Charles William Moots ☉ Mentone, Calif., Medical College of Ohio, Cincinnati, 1895, member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, fellow of the American College of Surgeons, formerly professor of surgical anatomy and clinical surgery, Toledo (Ohio) Medical College, served during the World War at one time on the staffs of the Lucas County and Flower hospitals, Toledo, Ohio, inspector of the western division of hospitals for the American College of Surgeons, aged 64, died, October 14, of heart disease.

Charles Bennett Wood, Monongahela, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1876, member of the Medical Society of the State of Pennsylvania, at one time county medical inspector, formerly on the staff of the Monongahela Memorial Hospital, for nine years member of the board of education, aged 84, died October 9 in the Hills view Farm Sanitarium, Washington, of myocarditis.

William Howard Dickson, Toronto, Ont., Canada, McGill University Faculty of Medicine, Montreal, Que., 1904, member of the Radiological Society of North America, senior demonstrator in the department of radiology, University of Toronto Faculty of Medicine, on the staff of the Toronto General Hospital, aged 55, died, October 28, of heart disease.

John Frederick Hempel ☉ Baltimore, Baltimore Medical College, 1894, assistant commissioner of health and director of the bureau of sanitation, formerly demonstrator of osteology and clinical medicine at his alma mater, at one time sanitary inspector of the city health department and coroner, aged 69, died, October 20, of chronic interstitial nephritis.

Julian Walter Brandeis ☉ New York, Columbia University College of Physicians and Surgeons, New York, 1899, formerly adjunct professor of clinical medicine, Fordham University School of Medicine, on the staffs of the Lebanon and Beth David hospitals, aged 68, died suddenly, October 23, of coronary occlusion.

Hugo Louis Maria Metz, White Plains, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889, member of the Medical Society of the State of New York, aged 78, died October 22 in St. Agnes Hospital, of chronic nephritis and arteriosclerosis.

Samuel Butler, West Medway, Mass., Baltimore University School of Medicine, 1904, member of the Massachusetts Medical Society, served during the World War, member of the school board, formerly on the staff of the Framingham-Union Hospital, Framingham, aged 54, died suddenly, October 16, of heart disease.

Herbert E. Truax, Miami, Fla., State University of Iowa College of Medicine, Iowa City, 1886, Hahnemann Medical College and Hospital, Chicago, 1899, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1902, aged 72, died, September 13, of carcinoma of the left parotid gland.

Frank James Tuttle, Naugatuck, Conn., University of Vermont College of Medicine, Burlington, 1898, member of the Connecticut State Medical Society, aged 60, died, October 23, in the New York Post-Graduate Medical School and Hospital, of embolism and arteriosclerosis.

Simon L. Rozema, Grand Rapids, Mich., Long Island College Hospital, Brooklyn, 1886, member of the Michigan State Medical Society, on the staff of the Blodgett Memorial Hospital, aged 74, died, October 21, in the Butterworth Hospital, of carcinoma of the stomach.

Charles Otis Yenerich, Rockford, Iowa, State University of Iowa College of Medicine, Iowa City, 1910, served during the World War, formerly county coroner, member of the city council and school board, aged 45, died, October 14, in a hospital at Mason City.

Charles W. Blagden, Norfolk, Mass., College of Physicians and Surgeons, Baltimore, 1894, member of the Associated Anesthetists of the United States and Canada, aged 66, died, October 4, in the Medfield (Mass.) State Hospital, of arteriosclerosis.

Edward Bentley Cox, Louisville, Ky., University of Virginia Department of Medicine, Charlottesville, 1927, member of the Kentucky State Medical Association, aged 31, died, in October, at a local hospital, following an operation for appendicitis.

Herbert A. Arnold, Ardmore, Pa., Jefferson Medical College of Philadelphia, 1878, member of the Medical Society of the State of Pennsylvania, veteran of the Spanish-American War, aged 76, died, October 27, of cerebral hemorrhage.

James Edward McCarthy, Hubbard Woods, Ill., Rush Medical College, Chicago, 1927, formerly on the staffs of the Highland Park (Ill.) Hospital and St. Francis Hospital, Evanston, aged 34, died, October 26, of Hodgkin's disease.

John Robinson Buchan, Chicago, Long Island College Hospital, Brooklyn, 1872, Civil War veteran, aged 87, died, October 27, of toxemia and urinary retention due to carcinoma of the prostate and bladder, and hypostatic pneumonia.

Sedie Sherman Rine, Danville, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1918, past president of the Montour County Medical Society, aged 40, died, October 13, in the Geisinger Hospital, of Ludwig's angina.

Abner Oakes, South Berwick, Maine, University of Pennsylvania School of Medicine, Philadelphia, 1930, member of the Maine Medical Association, aged 29, died, October 9, in the Hayes Hospital, Dover, N. H., of septicemia.

Ernest Albert Bryant, Los Angeles, University of Pennsylvania School of Medicine, Philadelphia, 1890, fellow of the American College of Surgeons, aged 64, died, October 19, of hypostatic pneumonia and angina pectoris.

George Henry Wetzel, Sapulpa, Okla., University of Louisville (Ky.) School of Medicine, 1904, aged 51, died, September 26, in St. John's Hospital, Tulsa, of omental hernia gangrene of the intestine and diabetes mellitus.

Percy Roland Fisher, Denton, Md., University of Maryland School of Medicine, Baltimore, 1897, served during the World War, at one time health officer of Caroline County, aged 59, died, October 26, of heart disease.

Edwin Samuel Maxson, Syracuse, N. Y., Syracuse University College of Medicine, 1886, aged 72, died, October 13, in the Crouse-Ingersoll Hospital of injuries received in an automobile accident.

Milton Lavelle Munson, Los Angeles, Hahnemann Medical College and Hospital of Philadelphia, 1890, aged 80, died, September 25, of edema of the lung, cerebral hemorrhage and hemiplegia.

Arthur Wellington Rusmissele, Washington, D. C., College of Physicians and Surgeons, Baltimore, 1877, member of the Medical Society of Virginia, aged 84, died, October 3, of nephritis.

David K. Sauls, Memphis, Tenn., Memphis Hospital Medical College, 1905, aged 54, died, October 13, in the Baptist Hospital, of peritonitis, ruptured duodenal ulcer and ruptured appendix.

George C. Brengle, Winchester, Ill., College of Physicians and Surgeons of Chicago, 1888, aged 73, died, October 10, at a hospital in Chicago, of cardiovascular renal disease.

Frederick Merwin Ives, Brewster, N. Y., University of Pennsylvania School of Medicine, Philadelphia, 1900, aged 66, died, October 28, in the New York Hospital, of brain tumor.

Hugo Toeppen, Riverside, Calif., University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1892, aged 79, died, September 26, of uremia, nephritis and myocarditis.

Arthur J. Willson, Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1901, aged 57, was found dead, October 30, of poison, self-administered.

Frank Ernest Balcome, St. Paul, Eclectic Medical Institute, Cincinnati, 1899, aged 61, died, October 19, in the Midway Hospital, of cavernous sinus thrombosis.

John Joseph Magner, Hackensack, N. J., College of Physicians and Surgeons, Baltimore, 1903, aged 59, died, October 25, of chronic cardiovascular disease.

George Charles Boyer, Union City, Ind., Physio-Medical College of Indiana, Indianapolis, 1907, aged 49, died, October 6, in Anderson, of chronic ulcerative colitis.

George R. Alsop, Vincennes, Ind., University of Louisville (Ky.) School of Medicine, 1875, bank president, aged 81, died, October 2, of cerebral hemorrhage.

Jesse Chambers Hill, Rockland, Maine, Georgetown University School of Medicine, Washington, D. C., 1891, aged 75, died, September 15, of arteriosclerosis.

Elmer G. Whinna, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1891, aged 63, died, September 30, of carbuncle of the neck.

Fred L. Juett, Lexington, Ky., Pulte Medical College, Cincinnati, 1899, served during the World War, aged 65, died, October 13, of cerebral hemorrhage.

Thomas J. McGinnis, Tihne, Ky., University of Tennessee Medical Department, Nashville, 1893, aged 73, died, June 13, of uremia and chronic nephritis.

Charles E. Chase, Utica, N. Y., New York Homeopathic Medical College, New York, 1873, aged 82, died, October 10, of myocarditis and pleurisy.

Elmer Ashley Barrows, Plymouth, Mass., Dartmouth Medical School, Hanover, N. H., 1900, aged 62, died, October 18, of heart disease.

Samuel Nelson Bausman, Pleasant Hill, Ohio, Medical College of Ohio, Cincinnati, 1890, aged 73, died, October 25, of cerebral hemorrhage.

James Pinkney Waldrep, Atlanta, Ga., University of Georgia Medical Department, Augusta, 1890, aged 67, died, October 19, of asthma.

Robert Schuyler Hubbard, Bedford, Ohio, University of Wooster Medical Department, Cleveland, 1877, aged 79, died, September 28.

Clinton Willis, Brooklyn, New York, Homeopathic Medical College and Hospital, 1892, aged 62, died, October 18, of heart disease.

Frank L. Southern, Philadelphia, Jefferson Medical College of Philadelphia, 1889, aged 74, died, August 7, of sarcoma of the right hip.

Frank Harbert Barbee, Memphis, Tenn., Vanderbilt University School of Medicine, Nashville, 1919, aged 38, died, July 26.

Howard Travell, New York, Albany Medical College, 1894, aged 68, died, October 17, of carcinoma of the rectum.

Daniel W. Hays, Ensign, Kan., Louisville (Ky.) Medical College, 1885, aged 79, died, October 8, in Wichita, of senility.

Oscar Michael Main, Custar, Ohio, Kentucky School of Medicine, Louisville, 1893, aged 69, died, September 11.

Frank Wilbur Chase, Des Moines, Iowa, Rush Medical College, Chicago, 1874, aged 83, died, September 9.

Joseph Perrin, Louisville, Ky., Louisville Medical College, 1883, aged 92, died, September 20, of senility.

Samuel Conway, Tulsa, Okla., St. Louis Medical College, 1867, aged 90, died, October 11, of bronchitis.

John Wesley Mitchell, Lakeland, Fla., Atlanta Medical College, 1914, aged 43, died, September 1.

Bureau of Investigation

VANNAY

Another Piece of Obesity-Cure Quackery

One of the latest stars in the firmament of obesity-cure quackery is a product called "Vannay." It is put on the market by Bio Medico, Inc., of New York City. Bio Medico is a subsidiary of McCoy's Laboratories, which puts out the so called McCoy's Cod Liver Oil Tablets. According to reports, the president of Bio Medico, Inc., is one Paul McCoy, while the treasurer and general manager is Curtis B. Brady. Mr. McCoy's claim to medical and pharmaceutical knowledge necessary for the marketing of a product for the self-treatment of self-diagnosed ailments seems to rest on the fact that he was formerly employed in the investment securities field and the furniture manufacturing line. Mr. Brady, the treasurer and general manager obtained his medical and pharmaceutical knowledge, it appears, from his connection with the publishing business.

In addition to Vannay, the obesity cure, Bio Medico, Inc. also puts out a laxative "By-Kem." There seems to be a remarkable similarity between Vannay and By-Kem if one is to judge by the advertising material. The use of the deadly parallel may be permitted.

VANNAY

Vannay Tablets developed by a group of brilliant Doctors of Science and Medicine

"These Scientists have degrees from European Universities. They have taught in leading Medical Schools and have been associated with the Pasteur Institute of Paris, France, the University of Berlin, Germany, and two leading Research Institutes of the United States. Their names are withheld for ethical reasons but their record of accomplishment is an open book."

"In Vannay they discovered a new way to combine an extract of bile in a most active form with extract of intestinal glands. It acts directly on the fat ferments (Lipases) which are fed from the liver to the intestines. By stimulating and regulating these digestive juices Vannay aids nature in her work of getting rid of waste matter."

The correct dosage is indicated on the bottle, but no two human beings are exactly alike. Some people—especially users of alcoholic beverages—frequently require an extra tablet with luncheon and dinner. You should start with the dose of Vannay Tablets called for on the bottle. If your system does not respond increase the dose or if the bowels move too often reduce the dose until your bowels move twice a day with a clocklike regularity. Remember Vannay is absolutely harmless and is not habit forming."

Before leaving the subject of By-Kem, with which this article deals only incidentally, it is worth noting that according to the McCoy advertising a number of allegedly prominent physicians connected with New York hospitals have given testimonials for this "patent medicine." The names of the physicians are not given although the hospitals are listed and physicians described as follows:

Polyclinic Hospital—A well known specialist on stomach and intestines
Doctors Hospital—One of New York's best internists
Sydenham Hospital—Another well known surgeon
Lenox Hill Hospital—A celebrated internist
Mount Sinai Hospital—A specialist on stomach and intestines

BY-KEM

By-Kem is the result of years of study and experiment by a group of brilliant Doctors of Science and Medicine.

"These Scientists have degrees from European Universities. They have taught in leading medical schools and have been associated with the Pasteur Institute of Paris, France, the University of Berlin, Germany, and two leading Research Institutes of the United States. Their names are withheld for ethical reasons but their record of accomplishment is an open book."

"In By-Kem they perfected a new way to combine an extract of bile in a most active form with extract of intestinal glands. It acts directly on the fat ferments (Lipases) which are fed from the liver into the intestines. By stimulating these digestive juices By-Kem aids nature in her work of getting rid of waste matter."

"The correct dosage is printed on the bottle but no two human beings are exactly alike. Some people—especially users of alcoholic beverages—frequently require an extra tablet. You should start with the dose of By-Kem Tablets called for on the bottle, if your system does not respond increase the dose or if the bowels move too often then reduce the dose until your bowels move with clocklike regularity. Remember it is absolutely harmless and is not habit forming."

New York Hospital—"A well known urologist"
Metropolitan Hospital—"A prominent internist"
Post Graduate Hospital—"A well known specialist in female diseases"
Presbyterian Hospital—"One of New York's best known gastro-enterologists"
Harlem Hospital—"A gynecology specialist"
Sloane's Maternity Hospital—"A famous gynecologist"
Beth Israel Hospital—"A prominent gastro-enterologist"
Lincoln Hospital—"A well known gynecologist"

So much for By-Kem, the laxative put out by Bio Medico, Inc. and advertised under claims that closely parallel those made for Vannay, the alleged obesity cure. In addition to the claims already quoted for Vannay, the following are some specific claims made for this nostrum:

The Only Safe Way To Reduce
Vannay builds a healthy body while fat melts away at the very places you want to lose it.
This scientific tablet enables you to lose two to three pounds a week.
Now every woman can weigh what she will—surely and safely.

The manufacturers, in true "patent medicine" style, display the usual vagueness regarding the composition of their nostrum. They do state that the principal element in Vannay is tauralactic acid. They also speak ambiguously of sodium tauralactate, and while the advertising matter does not actually declare that sodium tauralactate is the essential ingredient in Vannay, a representative of the Vannay concern is reported to have stated that it is.

According to the advertising circular, there is in addition, "an infinitesimal amount of copper" together with secretine and a "blood serum lipase." In the same circular there is reproduced what purports to be a certificate of analysis by the firm of Seil, Putt and Rusby, Inc., of New York City. This is reproduced in miniature with this article. As will be seen this so called certificate is typical of those used by the "patent medicine" fraternity for the purpose of impressing the ignorant rather than of giving any information.

In newspaper advertisements one Dr. Frank S. Orland of Philadelphia is brought into the picture.

Newspaper advertisement (Philadelphia Evening Public Ledger) of Vannay tying up with the radio spiel. In other advertisements Orland the medical director is described as an authority on overweight.

Dr. Orland according to the advertisements, is "Medical Director" for Vannay and their chief radio spiel. Dr. Orland according to the American Medical Association's records was born in Russia in 1894 and holds a diploma from Temple University School of Medicine granted in 1922. He is licensed in Delaware, Pennsylvania and Ohio. Although the newspaper advertisements describe Dr. Orland as an "authority on overweight," this seems to be the only available evidence in proof of the claim. If he is such an authority the medical profession has not yet learned that fact.

There is nothing in the alleged composition of this "patent medicine" to produce a reduction in weight except those elements that stimulate peristalsis. The introduction of secretine into the formula indicates that the group of brilliant doctors of science and medicine who are alleged to have developed Vannay are not sufficiently brilliant to have learned that secretine when taken by mouth has no activity. The entire pseudo-scientific background which the exploiters of Vannay give to their product is in keeping with the modern trend in the "patent medicine" field. When scientific terms and a technical vocabulary are glibly used in the high-pressure salesmanship for

**If you want
to REDUCE**
hear
Vivian Lytton, R.N.
and
Dr. Frank S. Orland
Medical Director
tell women about
Vannay
THE
NEW SAFE WAY
TO REDUCE
CONTAINS NO THYROID
OR LAXATIVE DRUGS
Not Habit Forming
ABSOLUTELY HARMLESS
Over Station WCAU Mon-
days, Wednesdays and

"patent medicines," the uninformed layman who may at some time or another have heard such words as ferment, lipase, chologogue, catalyzer, hormone, etc., is duly impressed.

The facts of the matter are, whatever reduction in weight may follow the use of Vannay is due to one or both of two factors. First, the laxative action ("increase the dose until your bowels move twice a day with a clocklike regularity") and, second, the requirement—common to practically every obesity cure nostrum on the market—that the victim, in taking it, should diet. Thus the purchaser of Vannay is told: "You will greatly hasten results if you go light on the fat and starchy foods that most Americans eat to excess." He is told to "cut out white bread entirely" and "favor the lean meats" and "use all the vegetables that grow above ground." In other words, eat foods of low caloric value, take Vannay until your bowels move twice a day and you will reduce in weight. Of course you will, and it hardly seems to have been necessary to call

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

THE ELLIOTT TREATMENT OF PELVIC INFECTIONS

To the Editor—In THE JOURNAL September 16 there is an article by Dr. Virgil S. Counsellor on the treatment of chronic infection of the pelvis. He tells about the use of the Elliott bag. Will you please discuss this treatment and tell me where I can buy one of these bags? Please do not print my name.
M D Tennessee

ANSWER—The so-called Elliott treatment is a method of applying heat to the pelvic tissues by means of a distensible rubber bag, introduced into the vagina, through which water at a controlled temperature is circulated. The principle of using heat in the treatment of pelvic inflammation is, of course, not new. The vaginal douche was described by Hippocrates but was forgotten and was rediscovered a thousand years later and written about by Galen and Celsus. According to Holden and Gurnee, German physicians in the eighteenth century poured heated shot into the vagina to obtain distention and to maintain prolonged heat. Early in the nineteenth century, Emmett again advocated the hot douche in the treatment of pelvic inflammation. Gellhorn in 1924 treated pelvic inflammatory disease by means of a prolonged douche, using 2 gallons of water at a temperature of about 120 F. Gynecologists for a number of years have applied heat by means of medical diathermy. General practitioners, however, have not used diathermy generally because the apparatus was costly and special knowledge and experience with the diathermic current are necessary. Furthermore, the configuration of the vaginal mucous membrane makes it difficult to distribute evenly the heat thus generated. Some type of apparatus that would distend the vagina and flatten out the vaginal folds would bring the heat in closer contact to the diseased tissues.

The apparatus devised by Dr. Charles Robert Elliott appears to be a distinct advance over preceding methods. It consists of a distensible rubber bag which is inserted into the vagina and around the cervix, and through which a current of hot water is circulated by a small electric motor at a constant temperature regulated by means of a thermostat. This apparatus is distributed by the Elliott Treatment Regulator Company, 6 East Forty-Fifth Street, New York. In THE JOURNAL, Sept. 16, 1933, Counsellor said that the average time for a treatment is one hour, although it varies, depending on the patient's tolerance to heat. This author, reviewing the results in a series of cases treated by the Elliott method at the Mayo Clinic, concluded that a high percentage of chronic infections of the pelvis can be cured clinically by this method. There is, however, a constant small percentage of chronic infections in which operations will be required. A larger series of cases treated by the Elliott technic was reported by Holden and Gurnee before the Section on Obstetrics and Gynecology of the New York Academy of Medicine and published in July, 1931, in the *American Journal of Obstetrics and Gynecology*. In their first 150 cases treated by the Elliott method there was represented all types and degrees of pelvic disturbances and all the patients were sick enough to necessitate hospitalization. For comparison these authors selected from the Bellevue Hospital records the charts of nonoperative pelvic inflammatory cases treated before the Elliott method was taken up. They compared the pathologic observations on admission with those present at the time of discharge in the two groups of cases. The comparison showed a more rapid absorption of pelvic exudates with the Elliott method. They said that all types of pelvic inflammation of infectious origin responded equally well. There was rapid relief of symptoms in acute salpingitis and in tubo ovarian abscess. In thirty-one cases of gonorrhea of the female genital tract the patients were discharged tentatively cured after an average of 20.5 treatments for the urethra and 18.3 treatments for the cervix was given.

Attention is invited also to an article by Cosgrove in the May 1933 issue of the *American Journal of Obstetrics and Gynecology* entitled *Injuries to the Vagina Resulting from the Elliott Treatment*. The author reports four cases of damage to the vaginal mucosa: two patients having definite burns of the upper vagina and two showing complete occlusion of the vagina by cicatricial atresia undoubtedly due to original damage similar to that noted in the first two. Cosgrove advises that regular careful inspection of the parts be maintained during any course of such treatment to avoid such accidents. In dis-

SEIL, PUTT & RUSBY INC.
ANALYTICAL CONSULTING & RESEARCH
CHEMISTS
16 EAST 34th STREET
NEW YORK, December 29 1932

CERTIFICATE OF ANALYSIS

Sample: Vannay Tablets N 21 364
Rec'd: December 22 1932
From: Bio Medico, Inc. 62 West 14th Street
New York, New York
Marks: Original Trade Package "Vannay" Tablets
purchased by E. A. Seil from Kinner & Amend
Manufactured by Bio Medico, Inc.
A. d. y. u.
Iodine - - - - - Absent
Thyroid Gland - - - - - Absent
Calomel - - - - - Absent
Phenolphthalein - - - - - Absent
Kodoin containing Drugs - - - - - Absent
Cathartic Resins - - - - - Absent
Physiological Cathartic Test - - - - - Negative

These tablets do not contain any Thyroid Gland
or Cathartics

SEIL, PUTT & RUSBY, Inc.

By: *Harvey H. Seil, Ph.D.*

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upon "a group of brilliant doctors of science and medicine" to establish such an obvious truism. But so long as the craze for slimness continues and the seekers for a short cut to that condition have money to spend, so long will "patent medicine" makers, and the newspapers and radio stations that split profits with them, continue to live off the fat of the land.

Mosquitoes Carried in Airplanes—Regular air services reach Miami, in Florida U. S. A., from Cuba, Haiti, Dominica, Porto Rico, Panama and many other places and in 1931 two officers of the United States Public Health Service determined to test whether these aircraft did or did not transport live mosquitoes. Over one hundred planes were examined on their arrival and in 20.5 per cent of cases were found to have mosquitoes on board including one *Stegomyia fasciata*. One of them proceeded to San Juan, P. R. bred some *S. fasciata* mosquitoes let them stain themselves chemically so that they could again be identified, and released 100 of them in three batches in separate airplanes. At Miami the other man awaited their arrival. The journey from San Juan was 1,250 miles and took ten hours including three stops at intermediate aerodromes. At each stop the crews were changed, passengers alighted or got in mail bags and luggage were discharged and loaded. A tiffin test it would be difficult to devise but of the 100 stained mosquitoes 11 for certain were identified and 11 more were suspected of being the test ones.—*Will John J. Royal, Army V Corps 61 2nd (Oct) 1933*

cussing this paper, Holden stated that they had given about 10,000 Elliott treatments and that only one slight burn occurred and that happened at a time when they had a substitute nurse. He recommended that moderate distention and moderate degrees of temperature be used in patients past middle life and emphasized that in all patients the vagina should be examined before each subsequent treatment to note the condition of the tissue. The distention used should always be borne with comfort by the patient. The temperature should be raised only 0.75 degree per minute and should not exceed 130 F.

DANGERS OF NICOTINE SPRAY

To the Editor—Would you kindly tell me whether there are any harmful effects on a worker using nicotine spray in greenhouses? Also are there any means of prevention of nicotine poisoning to such workers?

JOHN A WAHLEN M.D., Montebello Calif

ANSWER—Nicotine sprays, as used in greenhouses, are a practical source of chemical dermatitis. It is not fully established that the nicotine itself is the offending agent. Other substances used along with the nicotine may be responsible.

In addition, it is well established that contact with any one of several varieties of greenhouse plants may be followed by chemical dermatitis.

Nicotine has been credited with such properties as to permit of skin absorption which may be followed by systemic poisoning. This is neither affirmed nor denied but is regarded as possible.

The atomization of nicotine sprays may lead to some intake into the lungs. As tobacco dust containing nicotine entering the lungs may lead to harm there is every reason to accept the possibility of nicotine poisoning from this source. As the minimum lethal dose of nicotine for a human being approximates 0.065 Gm, much smaller quantities may be expected to produce ill effects.

For workers much engaged in this operation it seems desirable to recommend the wearing of light respirators of the filter type. The wet sponge variety is perhaps the simplest and most practical. In addition, the wearing of liquid proof gauntlets may be advantageous.

This reply contemplates theoretical possibilities. It is well known that many thousands of greenhouse workers and home gardeners use nicotine sprays without any known ill effects.

TREATMENT OF CONCRETE BURNS

To the Editor—We are having many cases of concrete burns at a construction company in London W Va. These burns are painful and are seen chiefly in hot weather when there is excessive perspiration. I am anxious to find a way to prevent the burns and also would be pleased to have any advice concerning the prevention and treatment of them. Crinitraphenol solution with a little phenol to relieve the pain seems to act fairly well.

E B THOMPSON M.D., Montgomery, W Va

ANSWER—Concrete burns primarily are to be attributed to the alkali action of the calcium oxide entering into the concrete. Nearly 60 per cent of the concrete is calcium oxide. In addition to the chemical burns, furunculosis, resulting in part from the plugging up of sebaceous glands, is common.

In the U S Public Health Service study of the Health of workers in the Portland cement industry (Bulletin 176 1928) it is noted that 62 per cent of all disabling skin disorders in this industry resulted from furunculosis.

The chemical burns may vary in severity from minor dermatitis to extensive second degree burns, the latter usually arising after the entry of concrete into the boots followed by failure immediately to remove the concrete. In addition, the entry of concrete into the eyes may lead to major injury.

In all skin injuries from lime and similar alkalis, slow healing is to be anticipated because the tissues damaged are likely to form a toughened "eschar," which acts as a foreign body until decomposed or removed. On this account tannic acid (so valuable in the treatment of many types of burns) is not always indicated.

By way of prevention of skin injuries, the following are suggested:

1 Tenacious oily substances, such as petrolatum or hydrous wool fat, should be applied to exposed portions of the skin.

2 All exposed portions of the body, particularly those on which dust settles, should be washed one or more times during the work day, in addition to the complete bathing at the end of the work period. In this washing, harsh soaps should be avoided. Oily substances should be reapplied.

3 Leather and rubber gloves should not be used, unless these effectively protect against the entry of any mixed concrete or dust.

4 At the beginning of any irritation, or after extensive exposure conducive to prompt irritation, flushing of the exposed area immediately should be provided. Sodium bicarbonate solution in the presence of lime will act as an acid, and constitutes a simple neutralizing agent. Dilute acetic acid may be of some value.

5 Cessation of further exposure for all workers presenting any degree of lime injury is desirable.

For the purposes of treatment, the following items are suggested:

1 All fresh burns should be treated by extensive lavage with water.

2 Mechanical rubbing off of damaged tissue should be done, particularly on the first day of the burn, and possibly on the second and third days. This may be a painful process, but it shortens the period of disability. At times a local anesthetic may be desirable.

3 Wet dressing with weak acids may be serviceable. The use of butesin picrate ointment tends to relieve pain, through the anesthetic action of butesin. This ointment is contraindicated for a few persons whose skins are irritated by this medication.

Further discussion of all aspects of alkali burns may be found in the publications cited below:

O Donovan W J. Lime Dermatitis, *Lancet* 1 599 (March 21) 1929.

Downing J G, and Welch C E. Industrial Dermatoses and Their Treatment, *New England J Med* 206 666 (March 31) 1932.

Barkun Otto and Barkun Hans. Treatment of Lime Burn of the Eye. *The Journal* Nov 15 1924 p 1567.

Davidson E C. Treatment of Acid and Alkali Burns, *Ann Surg* 85 481 (April) 1927.

Coan G C. Treating the Caustic Burn, *National Safety News* 11 22 (Feb.) 1925.

Kinkel W H. Treatment of Burns Caused by Acid or Alkali. *National Health* 7 828 (Dec) 1925.

HEART BLOCK—PULSATING ANEURYSM

To the Editor—1 I have a patient aged 27, a fleshy woman with heart block shown by electrocardiogram. Aside from rest what treatment may be of value? She has menstrual difficulties. Would glandular preparations including thyroid, be contraindicated? 2 A man aged 43 with a history of a chancre twenty-three years ago has pulsating aneurysm. The blood pressure is 160 systolic 60 diastolic. What treatment aside from iodides is indicated and in what form? Would mercury and bismuth compounds be dangerous? In case of women would iodides be of value? Please do not publish my name.

M D Oklahoma

ANSWER—1 It is not stated whether the heart block is complete, partial or merely a delay in conduction time, or partially whether it is accompanied by symptoms. The cause should be sought, such as syphilis or previous infectious disease. In established, symptomatic block, no treatment may be required beyond reasonable restriction of activity. The weight should be reduced to the average normal for the patient's age and height, primarily by dietary measures. The present caloric intake should be estimated and a diet of substantially lower caloric value substituted. Fats and, to a lesser extent, carbohydrate must be materially reduced, protein need not be restricted. The daily food allowance should include one or two eggs, two glasses of skimmed milk or buttermilk, ample leafy vegetables, fruit and lean meat, restrictions should be placed on butter, cream, fat meat, sugar, bread and cereals. A weight chart should be kept. Desiccated thyroid gland may also be used, starting with 0.13 Gm daily and reducing to 0.065 Gm if tachycardia or tremor of the fingers develops. These measures may correct scanty, delayed or irregular menses. Since the nature of the menstrual difficulty is not stated, further advice cannot be given.

2 In the patient with aneurysm due to syphilis, both potassium iodide and preparations of mercury should be used. Beginning with ten drops three times daily saturated solution of potassium iodide may be increased one drop daily to thirty or forty drops per dose. Mercury compounds may be used in any form except intravenously or intramuscularly. Other treatment varies with the individual case, depending particularly on the condition of the coronary arteries and myocardium. After initial treatment with iodides and mercury, neosarsphenamine may be used cautiously, beginning with small amounts (from 0.025 to 0.1 Gm) and gradually increasing to moderate doses if no reactions occur.

A compound that seems to give good results is bismuth arsphenamine sulphonate. This is given intramuscularly at intervals of from three to seven days, beginning with a small dose and gradually increasing to 0.2 Gm to a total of from forty to eighty injections. It must be emphasized that individualization is necessary. The subject is discussed in general by Christian (Oxford Monographs on Diagnosis and Treatment 3 235) and in more detail by Stokes (in Tice's Practice of Medicine 3 428a).

INDUSTRIAL HAZARDS FROM NITROGEN OXIDES
OR BLACK POWDER EXPLOSIONS

To the Editor—A man aged 33 a coal miner was at work and the mine was using Black Pellet Powder. About fifteen to twenty minutes after a blast the patient with three or four miners entered the compartment which had been blasted and they all loaded a car of coal, taking about fifteen minutes. After that time he was suddenly nauseated, dizzy and dyspneic. He was taken home where I saw him from four to six hours later. The temperature was 101 F. The pulse rate was 118. The blood pressure 120 systolic 78 diastolic. He complained of dyspnea and dizziness and of a sharp pain in the left lower anterior part of the chest, especially with a deep respiration. Next day the temperature was 103 F., respiration 36 and blood frothy sputum appeared. The pain persisted in the same part of the chest. Respiration was shallow and rapid. The patient vomited several times. Examination revealed no abnormal signs. The head, eyes, ears, nose, neck and mouth showed no pathologic changes. The heart was regular in rate, rhythm and force. The borders were within normal limits. There was no precordial activity and no palpable thrills could be detected. Examination of the lungs showed questionable impaired resonance at the lower left lung field. Auscultation revealed normal breath sounds. No pathologic changes were elicited in the abdomen. Four other men are known to have had a similar experience at different times. Do you know of any intoxicants contained in the blasting powder that might cause the picture? Please omit name. M D Ohio

ANSWER—The picture presented strongly suggests the likelihood of injury by nitrogen oxides. Only occasionally are these gases produced after mine blasting with black powder. Faulty detonation of the charge resulting in the burning of some or all of the powder, rather than a quick explosion, is the common source of this gas in mines.

Carbon monoxide may have produced some of the manifestations at the onset of the condition, but subsequent developments are characteristic of a mild intoxication from nitric oxide or other nitrogen oxide. Comparison should be made between the symptoms cited and those characteristic of this injury. These include dyspnea, coughing, vomiting, dizziness, difficulty in walking, pain in the chest and pain in the abdomen. After a period of a few hours of increasing comfort, all are exacerbated and accompanied by fever, prostration, expectoration of bloody fluid, pleuritic pains, rapid respiration and pulmonary edema.

Explosion of black powder may form potassium carbonate, potassium sulphate, other sulphur compounds, carbon dioxide, carbon monoxide and various oxides of nitrogen. One or more of these gases account for any occupational injury that arose under the conditions described in the query. Pain in the left lower part of the chest together with dyspnea, nausea and tachycardia, are common symptoms in the neuroses so common after exposure to carbon monoxide in low concentrations.

HEADROLLING

To the Editor—My boy aged 7 years has rolled his head at night when asleep all his life. He is worse now than ever in that his shoulders and whole body roll and he has added another one now. I told him to lie on his face so that he would not roll his head and I would give him a bicycle but he brings his leg up and brings down the leg with a resounding whack that wakens me in the same room. These rolling and thumping movements do not take place before midnight unless he has been awakened partially and is going to sleep. After midnight until morning off and on the movements continue as much as five minutes at a time. It is worse when he sleeps lightly and worse from 4 o'clock on. He also does it at first on going to bed to put himself to sleep. Punishments have no effect, waking him up has no effect, promises of prizes has no effect. He is otherwise well and is a bright boy and learns things readily at school. There is no insanity in the family on either side. He has had cod liver oil, eggs and a proper vitamin diet and there are no other signs of rickets save that he sweats considerably—more than normal—before 12 o'clock at night mostly on first going to bed. I should like to break him of the habit. Can you give me some advice? I find nothing of help in Kerley's book (New York) or Griffiths (Philadelphia) both child specialists. Kindly omit name. M D, Shantung China

ANSWER—A condition similar to the one described if not identical with it has been mentioned in the literature by various authors. Oppenheim has described an involuntary nocturnal movement of the head which he observed that was tic-like in character. He described the condition as a "sleep tic." Zappert described the condition as nocturnal jactitation of the head. These head movements are often rhythmic and occur with considerable force during sleep. In some instances movements become more rapid and finally the head moves like that of a dancing dervish though the patient continues to sleep. This condition may remain unchanged for years. Other cases have been described in which the rotatory movement was first confined to the head and later the trunk and extremities participated.

This nocturnal rolling of the head is neither a tic nor a nodding spasm for these do not occur during sleep. Zappert considers the condition one of stereotyped movements which from long and repeated continuance become automatic as do

thumbsucking and nailbiting. It is difficult to advise about treatment though the general advice concerning nervous children should be applied: a quiet life, avoidance of excessive mental stimulation, healthful play and exercise with avoidance of excessive fatigue, hot baths at bedtime, and a course of treatment with either bromides or phenobarbital.

References to this condition may be found in Abt's *Pediatrics* volume 7, chapter CLXXIII, contributed by Dr. George Hassin, p. 306, also *Die Nervenkrankheiten des Kindesalters* by Peritz, Berlin, and J. Zappert (*Jahrb. f. Kinderh.* 42 70, 1905).

TREATMENT OF STERILITY

To the Editor—A woman aged 35, physically normal in all respects married five years is desirous of having children. Physical blood urine and gynecologic examinations have all been negative except that she excretes too many female sex hormones in the urine just prior to menstruation. The basal metabolism is normal. She has had two dilations and curettements and one dilation with insertion of a Wylie drain for two weeks. The Rubin test is negative. She has taken progesteron both by mouth and hypodermically daily ten days before menstruation. Neither preparation has helped the dysmenorrhea or the sterility. She has never had an orgasm. What would you suggest to make the patient pregnant? Her husband is healthy. Examination of the semen showed normal spermatozoa. Please omit name and town. M D Pennsylvania

ANSWER—The treatment of sterility is not easy, especially in a case in which the conditions are as normal as in the one described. It is not clear what is meant by "She excretes too many female sex hormones in the urine." It is assumed that the statement "The Rubin test is negative" implies that the tubes are patent to gas, else of course this test should be repeated and perhaps also iodized oil should be used to detect a possible block in the tubes. Of course, if the tubes are definitely impermeable, only an operation such as salpingostomy or tubal implantation may help overcome the sterility. As is well known an orgasm is not essential to fertility. Preparations of female sex hormones are seldom effective in sterility cases, and even when it seems to be responsible for conception, large doses are required. Nothing is said concerning the weight or height of the patient. In spite of the normal basal metabolic rate, small doses of thyroid should be given over a period of a few months.

Even though the spermatozoa are normal, they may nevertheless not be able to reach an ovum in the tube. The physician should first examine the semen as it is obtained from the vagina immediately after intercourse to make sure that the sperm remain alive in the vagina. But, more important still it is essential to aspirate the cervical secretion shortly after intercourse to make sure there are motile sperm in and beyond the cervical canal. Not infrequently there is a cervical barrier to spermatozoa and this may be due to cervicitis or a thick, mucous plug. If the latter conditions are present, they must of course be treated. If in spite of treatment live spermatozoa are found in the condom specimen but not in the vagina or the cervix, insemination may have to be performed. This must be repeated a number of times during each intermenstrual period under aseptic precautions. Thus far insemination has had only a limited field of usefulness in human beings.

Alkaline douches just before coitus are sometimes effective.

INJURIES AFTER SPINAL ANESTHESIA FOR
CURETTEMENT

To the Editor—A patient was admitted to a hospital because of incomplete abortion. A curettement was performed under spinal anesthesia (procaine hydrochloride 100 mg. in 4 cc. of fluid) and the uterus was apparently scraped clean. About thirty hours later the patient complained of pain over both internal malleoli and on examination there was noted several vesicular formations over each internal malleolus. The appearance of the surrounding tissue did not suggest a burn of a physical or chemical nature. Careful questioning of the floor and operating room nurses did not present any enlightenment as to the cause. The vesicles were ruptured and evacuated of the clear serous contents and healing progressed fairly well. Laboratory data including the Wassermann report were negative. The appearance was highly suggestive of some nerve involvement as one sees in herpes zoster. Is it possible that the formations could be attributed as an untoward sequel to the spinal anesthetic? If so please give data as to references. Please omit name. M D Ohio

ANSWER—The pain and vesicles that appeared on the internal malleoli almost certainly had nothing to do with the spinal anesthesia. Herpes zoster is the most likely diagnosis. The administration of spinal anesthesia is rather heroic for such a simple operation as a curettement. In such a case the anesthetic carries much more risk than the operation itself. If the surgeon wants to avoid a general anesthetic he can easily perform a curettement under direct infiltration anesthesia, which is far safer and simpler than spinal anesthesia.

STOKES ADAMS SYNDROME WITH ARTERIOSCLEROSIS

To the Editor—I have been treating an elderly woman for hypertension by the use of sodium nitrite (previously having used potassium iodide) and a salt free diet. She has had strychnine one fortieth grain (16 mg.) at intervals because of a slow pulse. At times she has spells of everything going black, and will fall if she is standing at such times. The blood pressure is 200 systolic 80 diastolic. The heart rate ranges from 40 to 80. The urine is normal. She has developed a generalized catarrh of the mucous membranes. The mouth is red and sore the uvula is red and swollen and there is burning on urination. There is soreness over the urinary bladder. There is diarrhea causing burning. There is no fever and the patient is not acutely ill but of course she is uncomfortable. What could cause this generalized condition of the mucous membranes? Is there a lack of something in the diet? Any suggestions will be appreciated. Please omit name.

M D Washington

ANSWER—That the attacks of transitory loss of consciousness associated with a variable heart rate as low as 40 represent the syndrome of Stokes-Adams is quite clear. The high pulse pressure suggests aortic insufficiency or if recorded during the period of slow heart rate, quite typical of the blood pressure in heart block. General arteriosclerosis is no doubt an important factor and may be the essential cause.

The proper interpretation of the other symptoms is difficult from the information given. It does not seem reasonable to associate these with the cardiovascular phenomenon unless arteriosclerotic Bright's disease with failure of renal function and retention acidosis can be assumed. Arteriosclerosis of the mesenteric vessels with resulting diarrhea is a possibility. With loss of fixed base, acidosis with the mouth and urinary symptoms might occur.

Other diseases associated with diarrhea, sore mouth and tongue are pernicious anemia, and the vitamin deficiencies pellagra and sprue.

That the treatment employed can be the causal factors is most unlikely. Potassium iodide is certainly not at fault and sodium nitrite in therapeutic doses will not cause diarrhea or toxic symptoms such as those described.

PREVENTION OF CLUMPS IN BARIUM SULPHATE MIX

To the Editor—It has frequently been noticed that after the administration of a barium meal there has been difficulty in eliminating the accumulated barium sulphate which seems to form concretions in the intestinal canal which when broken present a yellowish white color and a noncrystalline cleavage. As the barium sulphate is given in an impalpable powder form and is practically insoluble in the body acids and alkalis the question has come up regarding the agglutinating factor. Can you give any information on this point? Please omit name.

M D, Minnesota

ANSWER—The formation of concretions may possibly be lessened by the addition of an indigestible colloid such as Karaya, of which 5 per cent may be mixed with the usual dose of 150 Gm of barium sulphate, which is shaken with 500 cc of water just before taking. It not only keeps the powder in excellent suspension but it also seems to make the evacuation easier by softening the stool. Agar has a similar effect but is not quite suitable for the purpose. The agglutinating factor is possibly mucin.

ARSENICAL DERMATITIS

To the Editor—A man aged 27 on physical examination was entirely negative except for an arsenical dermatitis of one year's duration which he contracted in a plant where arsenic is used. He has been under the care of several physicians and at present has had nine remissions and exacerbations. Itching is almost unbearable and is most severe over the perineal region and especially the scrotum. Irritation caused by light exercise or warm weather intensifies the symptoms. My treatment has been sodium thiosulphate by mouth, rest, soda and colloid baths, dusting powders, calamine lotion and daily intravenous injections of sodium thiosulphate 15 grains (1 Gm.) each. After one month of this treatment he was symptom free. The dermatitis had disappeared and he felt well and strong. The intravenous medication was then discontinued and a week later his dermatitis began to recur. Returning to intravenous sodium thiosulphate three injections have again caused marked improvement. I should like you to answer the following questions: Is the treatment acceptable? What are his chances for a permanent recovery? Could you direct me to some literature on this subject? Any suggestions you will give me will be greatly appreciated. Kindly omit name.

M D Minnesota

ANSWER—The treatment outlined is satisfactory for a case of dermatitis due to arsenic. In view of the numerous exacerbations, presumably without further exposure to arsenic care should be taken to exclude other causes particularly external irritants. Stokes has pointed out the advisability of removing any chronic foci of infection especially in the tonsils and teeth as this factor seems to play an important part in some cases of dermatitis of this type. This procedure should however, be carried out with caution as it may cause a severe flare-up in the skin condition.

The chances for permanent recovery are good, but the skin may remain irritable for weeks or months, so that recurrent attacks of dermatitis, usually patchy in type, may occur.

Among the numerous articles dealing with this subject are

- McBride W I and Dennis C C Treatment of Arsenamine Dermatitis and Certain Other Metallic Poisonings Arch Dermat & Syph 7 63 (Jan) 1923
Osborne E D Microchemical Studies of Arsenic in Arsenical Dermatitis Arch Dermat & Syph 18 37 (July) 1928
Ullmann K Dermat Wchnschr 82 11 (Jan 2) 1926

TREATMENT OF STOMATITIS IN
PERNICIOUS ANEMIA

To the Editor—Please inform me of the latest treatment for stomatitis or sore mouth in pernicious anemia. A patient seems to have normal blood with the exception of a few sickle cells. Her strength and blood count are good but the sore mouth still persists in spite of all medication. She scarcely can eat anything but bland liquids. She is now taking liver, stomach and dilute hydrochloric acid.

C GLENN WHITE M D San Diego Calif

ANSWER—It is unusual for a sore tongue to persist in a patient with pernicious anemia after the blood has reached normal limits. When this does occur it may be the earliest evidence of a relapse and, therefore, be an indication for increasing the dose of liver extract or desiccated hog stomach. There is no specific local medication for this condition although the application of a 1 per cent solution of silver nitrate for two or three days may give temporary relief. The dilute hydrochloric acid should be omitted for several weeks as this may aggravate the glossitis.

IRRADIATION IN TUMOR OF CAROTID BODY

To the Editor—I recently saw a patient with a tumor mass in the left side of her neck which I diagnosed as a tumor of the carotid body or parathyroidoma. It is now the size of a small hen's egg and is freely movable from side to side but not up and down. It is firm smooth and not nodular. It has given little pain but it pulsates with each beat of the heart. Would you advise x-rays, biopsy or attempted removal?

WILLIAM LOOMIS POMEROY M D Waycross Ga

ANSWER—It is not wise to irradiate a tumor of which the nature is not known for if the nodule should prove to be radioresistant this might prevent recourse to surgery later because of interference with healing from the tissue injury. If as seems probable, the growth is from the carotid body, surgical removal is advisable for in a considerable portion of such tumors a permanent cure is obtained after a complete excision. If there should be a recurrence, then the question of irradiation, whether by x-rays or by radium may be considered.

TREATMENT OF VARICOSE ECZEMA

To the Editor—A woman aged 70 otherwise in good health has had varicose veins of the legs for many years. For the last five or six years a patch of eczema has developed in the region of the right ankle about 3 inches in diameter which itches so intensely that it often bleeds as a result of scratching. Numerous antipruritic lotions and ointments were advised by several prominent dermatologists and were used as were also starch and soda baths. Unna's paste stimulating preparations such as liquid tar also liquor aluminum acetatis the oral administration of bromides and calcium gluconate. She has worn elastic bandages. None of these measures allayed the itch. Control of her diet combined with rest in bed for four weeks and the local application of a liquid tar preparation did heal the eczema and gave considerable relief but soon after she was on her feet again the eczema and the pruritus returned. An emmenturgeon injected and obliterated all the visible and palpable veins of the right leg and thigh about six months ago with some improvement for a short time but the eczema and intense itching have returned now and are as severe as originally. There is a similar condition of the left ankle but not as marked. The blood sugar urea creatinine and uric acid have been normal on several examinations. Urinalysis is normal. The blood pressure is normal. The blood vessels are not sclerotic. The Wassermann reaction is negative. Would you advise roentgen therapy over the eczematous area? Can you suggest anything further in the way of treatment? Kindly omit name.

M D Pennsylvania

ANSWER—The condition described seems to be a varicose eczema. One wonders about the possibility of a superimposed ringworm infection, the diagnosis of which could be easily made by the examination of scales. The varicose veins should be completely obliterated from the groin to the ankle. If necessary, a high saphenous vein ligation can be made eliminating further venous backpressure on the irritated area of skin. Locally the application of a lotion containing fuchsin 1 Gm, phenol 5 Gm, alcohol 10 Gm, and distilled water, 100 Gm may soothe the itch. But a continuous, systematic compression with Unna's boot or an elastic adhesive dressing is most important. The dressing must be changed weekly and continued for a long time. If all other methods fail, small doses of x-rays (from 100 to 125 roentgens with a heavy filter) can be administered by a cent

petent roentgenologist The fact that one is dealing with a chronic and quite resistant type of lesion requires a great deal of patience The patient should be in the hands of a man experienced in this line, and she should not be shifted from one physician to another A physician's mother is often apt to be the victim of too many suggestions

CAST ON PARALYZED LEG

To the Editor—Would it be good treatment to apply a plaster cast to a paralyzed leg and should this be done early? Would a proper fitting brace applied to the paralyzed leg be better than a plaster cast? Should it be applied as soon as the child is fit to be out of bed? Please omit name

MD Pennsylvania

ANSWER—The data given are insufficient in that mention is not made of the stage of the disease, the presence or absence of deformity, pain and sensitiveness

It is good treatment to apply a plaster-of-paris splint or a light cast to the paralyzed leg A properly fitting brace has many advantages over a complete plaster-of-paris cast in that it is removable, thereby permitting the use of physical therapy, including radiant heat, very gentle massage, guarded active and passive movements, electrotherapy, hydrotherapy including underwater gymnastics, and heliotherapy by sun or ultraviolet lamp

IMMUNITY TO TYPHOID AND USE OF CONVALESCENT SERUM

To the Editor—1 What is the serologic or immunologic explanation of why blood or serum from either convalescent typhoid patients or individuals recently immunized against typhoid is not given as treatment in typhoid? 2 Does intravenous injection of typhoid vaccine create a positive Widal test and if so does the positive Widal test induced develop much more rapidly and of higher titer than that induced by ordinary subcutaneous injection of the vaccine? 3 Is there a parallelism between the Widal test and clinical immunity to typhoid?

R M PURDIE MD Houston, Texas

ANSWER—1 There is no serologic or immunologic explanation why the serum or blood of typhoid convalescents or of persons recently immunized against typhoid is not used for treatment—it just has not been done except possibly in a few cases

2 The intravenous injection of typhoid vaccine, which might be dangerous, will call forth specific agglutinins, and under comparable conditions probably more rapidly and more profusely than the subcutaneous injection

3 The presence in the blood of agglutinins for the typhoid bacillus indicates a degree of immunity to typhoid infection but not necessarily absolute clinical immunity under all conditions

DISAPPEARANCE OF SPERM AFTER VASECTOMY

To the Editor—A patient has had a bilateral vasectomy How long does it take before the spermatozoa disappear from the semen in other words before the patient is sterilized? Kindly omit name

MD, North Dakota

ANSWER—There are no definite statistics available as to how long a time is required for spermatozoa to disappear from the semen following bilateral vasectomy It is known that the secretions from the various parts of the genital tract have much to do with the activity of the spermatozoa, and in the absence of such secretions the motility of the spermatozoa is likely to be retarded In all probability one or two ejaculations should be sufficient to remove spermatozoa from the semen following bilateral vasectomy

IMMUNITY TO DIPHTHERIA

To the Editor—An adult with a positive Schick test has been given toxin antitoxin twice One cubic centimeter of toxin antitoxin at weekly intervals for three doses was given each time One year after the last immunization the Schick test is still positive The sensitivity test for toxoid is also strongly positive What procedure should be used to render this individual immune to diphtheria? Please omit name

MD West Virginia

ANSWER—In some adults who are highly sensitive to proteins it is difficult to be certain whether a Schick test is positive or not In such cases it is helpful to estimate the amount of antitoxin in the blood by Romer's method If the blood contains 0.03 or more unit of antitoxin per cubic centimeter, the person is immune and the apparently positive Schick test may be disregarded This estimation requires the use of guinea-pigs and is not practical outside a laboratory However, persons are occasionally found who continue to give positive Schick tests after repeated series of injections of toxin-antitoxin They appear to lack the ability to elaborate antitoxin The knowledge that they are susceptible to diphtheria should lead them to secure prompt advice in case of sore throat and so to obtain early administration of antitoxin if diphtheria should occur

COMPATIBILITY IN PRESCRIPTION

To the Editor—Please tell me if there are any contraindications to the use of a mixture of solution of potassium arsenite and mercuric chloride (sufficient mercuric chloride for a 1:5000 solution) in Vincent's infection Are there any chemical reasons why these preparations should not be combined? I have employed this mixture to some extent and it appears to be more efficacious than the solution of potassium arsenite alone

S J LEWIS MO Augusta Ga

ANSWER—When the two are mixed a grayish precipitate forms obviously because of the alkalinity of the solution and the formation of black mercurous oxide the mercuric salt is evidently reduced A solution of arsenic acid is compatible with mercuric chloride and might for that reason be preferable

CASES OF HYDROCEPHALUS IN ONE FAMILY

To the Editor—I note in THE JOURNAL September 23 page 1020 a query concerning the birth of more than one hydrocephalic child to the same mother I agree with you that such an occurrence should be recorded in medical literature were such an event always recorded one could with more certainty make adequate predictions as to the chances of its occurring in any family in which one hydrocephalic child has already been born

As to some of the references to similar events I would call your attention to the following which have been picked up by me in the course of my reading and probably represent only a small part of the references that might be found if one made an extensive survey of the literature

Allingham (Lancet 2 1866 1904) reported one woman as having had twelve pregnancies four of which were miscarriages and five normal There were three premature hydrocephalic children The thirteenth pregnancy resulted in a hydrocephalic infant from whose head 6 pints of fluid was removed

Andersen (Am J Obst & Gynec 9 382 [March] 1923) reported two of three children hydrocephalic

Popham (Lancet 1 1829, 1906) recorded the case of a man who by his first wife had one infant with hydrocephalus one with spina bifida by his second wife one with hydrocephalus and one with anencephaly

Straub (Arch f Rass u Geschlch f Biol 14 199, 1922) found a case in which a man had married his niece and had one child with bare hip and club hands and feet and two others with hydrocephalus as well as malformed hands Two were normal

Wetterwald (Rev franc de gynec et obstet 19 668 1923) reported the birth of two male infants with hydrocephalus and malformed genitalia

Wiener (Zentralbl f Gynak 30 706 1906) reported an instance in which the first and third children had hydrocephalus

This list incomplete as it is nevertheless shows that when once a woman has given birth to a hydrocephalic infant she may do so again If she has done so twice as was the case in the report from your correspondent from Massachusetts it is evident that the combination of hereditary factors necessary to produce hydrocephalus is one easily obtainable in that mating Therefore such a couple would run a grave risk of having other children in the family reproduce the same defect

Moreover hydrocephalus is a defect that is not infrequently found with spina bifida and sometimes with clubfoot, frequently with both defects Should subsequent offspring not have hydrocephalus they might easily show the other defects Your correspondent has answered his patients wisely

MADGE THURLOW MACKLIN MD London Ont

TREATMENT OF SPINAL CORD LESIONS IN PERNICIOUS ANEMIA

To the Editor—In reply to a question on this subject (THE JOURNAL September 30 p 1099) it should be pointed out that an adequate amount of the antianemic substance is that amount which is sufficient to maintain the blood at a normal level with an excess above this to influence favorably the spinal cord lesions It is not sufficient to maintain the red blood cell count at a level of between 4.5 and 5 million per cubic millimeter because spinal cord lesions will progress at such levels Counts of 5 million cells or even much higher should be maintained for best results as I have pointed out elsewhere Such levels are best maintained and improvement perhaps is more striking with the use of liver extract administered parenterally as has also been pointed out (Am J M Sc 186 271 [Aug] 1933) The importance of regulated and controlled exercises designed to retrain the affected muscle groups and to improve the balance has been emphasized in an article in the New England Journal of Medicine (209 329 [Aug 7] 1933) and elsewhere Such training should be emphasized as opposed to exercise as generally suggested

In your answer to a question by Dr William L Nute in regard to the administration of iron in secondary anemia (THE JOURNAL September 23 p 1019) no mention is made of the use of those iron salts which have recently been shown to be the most efficient The preponderance of evidence favors the use of the more readily soluble or of the ferrous salt Ferrous ammonium citrate (L S P) may be used either in solution or as the dry powder which is available in finely powdered form in capsules (Elderle Laboratories) Ferrous carbonate (L S P) may be given conveniently as Bland's pill The need for large doses (3 Gm daily) should be emphasized Doses of 0.2 Gm of reduced iron three times daily can hardly be considered adequate dosage

WILLIAM F MURPHY MD, Boston

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Oral New York Dec 15-16 See Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B Candidates) The examinations will be held in various cities of the United States and Canada Dec 9 See Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Cleveland June 11 See Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Cleveland June 11 See Dr W P Wherry 1500 Medical Arts Bldg Omaha

CALIFORNIA Reciprocity Los Angeles Dec 6 See Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver, Jan 2 See Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT Indorsement Hartford Nov 28 See Dr Thomas P Murdock 147 W Main St, Meriden

DELAWARE Wilmington Dec 12-14 See Dr Harold I Springer 1013 Washington St Wilmington

KANSAS Topeka Dec 12-13 See Dr C H Iwing Larned

KENTUCKY Louisville Dec 5-7 See Dr A F McCormick, 532 W Main St Louisville

MARYLAND Regular Baltimore Dec 12-13 See Dr Henry M Fitzhugh 1211 Cathedral St Baltimore Homeopathic Baltimore Dec 13-14 See Dr John A Evans 612 W 40th St Baltimore

MINNESOTA Basic Science Minneapolis Jan 2-3 See Dr J C McKinley 126 Millard Hall University of Minnesota Minneapolis

NATIONAL BOARD OF MEDICAL EXAMINERS The examinations will be held at centers in the United States where there are five or more candidates Feb 14-16 See Mr Everett S Fwood 225 S 15th St Philadelphia

NEBRASKA Lincoln Nov 22-24 Director Bureau of Examining Boards Mrs Clark Ierkins State House Lincoln

NORTH CAROLINA Raleigh Dec 4 See Dr B J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 2 See Dr G M Williamson 4½ S 3rd St Grand Forks

OHIO Columbus Dec 6-8 See Dr H M Platter 21 W Broad St, Columbus

OREGON Jan 2-4 See Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia Jan 2-6 See, Mr W M Denison 400 Education Bldg Harrisburg

TEXAS San Antonio Nov 21-23 See Dr T J Crowe 918 19-20 Mercantile Bank Bldg Dallas

VIRGINIA Richmond Dec 6-8 See Dr J W Preston 28½ Franklin Road Roanoke

WISCONSIN Basic Science Milwaukee Dec 16 See Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

California July Examinations

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports the written examinations held in San Francisco, July 11-13, 1933, and in Los Angeles, July 25-27. The examinations covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Two hundred and seven candidates were examined, 202 of whom passed and 5 failed. The following colleges were represented

College	PASSED	Year Grad	Per Cent
College of Medical Evangelists (1933)	78 2 80 3 82 3 83 4 83 6 83 8 83 9 84 3 84 9 85 1 85 4 85 5 86 1 86 1 86 2 86 3 86 3 86 6 86 7 87 8 87 2 87 3 87 6 87 8 87 9 88 3 88 6 88 9 88 9 89 7 91 2 92 7	(1932)	77 7
Stanford University School of Medicine (1933)	78 3 79 7 79 9 80 3 81 2 81 3 82 2 82 7 82 9 83 4 83 6 83 6 84 9 84 3 84 6 85 2 85 6 85 9 86 2 86 3 86 6 86 7 87 1 87 2 87 4 87 6 87 7 87 9 88 8 88 2 88 4 88 7 89 8 89 1 89 4 89 7 90 1 90 4 90 7 91 9	(1932)	81 6
University of California Medical School (1933)	79 1 81 8 81 1 81 3 82 7 82 8 83 8 83 1 83 2 83 4 84 8 84 1 84 2 84 8 85 8 85 1 85 2 85 4 85 6 85 8 85 8 85 9 86 8 86 2 86 3 86 3 86 3 86 4 86 6 86 7 86 8 86 9 87 1 87 2 87 4 87 8 88 1 88 1 88 1 88 7 89 8 89 2 89 3 89 6 90 3 90 4 91 1	(1932)	85 4
University of Southern California School of Medicine (1933)	77 7 79 8 81 4 81 8 84 7 85 8 7 3 88 8	(1932)	80 6
University of Colorado School of Medicine (1933)	80 7 86 8 (1933) 85	(1932)	83 6
Loyola University School of Medicine (1933)	81 9 85 1	(1929)	89 8
Northwestern University Medical School (1933)	77 7 79 8 81 4 81 8 84 7 85 8 7 3 88 8	(1931)	86 1
Rush Medical College (1933)	84 6 85 4 85 7 86 1 87 8 9 3 90 4	(1931)	88 9
University of Illinois College of Medicine (1933)	80 6 82 6 82 9	(1932)	86 7
University of Kansas School of Medicine (1933)	82 6	(1932)	84
University of Louisville School of Medicine (1933)	82 3	(1931)	81 7
Tulane University of Louisiana School of Medicine (1933)	81 7	(1930)	81 7
Johns Hopkins University School of Medicine (1931)	86 7 87 4 (1933) 81 8		

University of Michigan Medical School (1932) 86 2
University of Minnesota Medical School (1933) 80 4 89 3
St Louis University School of Medicine (1933) 88 7
Washington Univ School of Medicine (1932) 86 2 87
Creighton University School of Medicine (1933) 78 9
86 (1933) 75 6 82 6 88 1
Cornell University Medical College (1930) 78 3
New York Homeopathic Med College and Flower Hosp (1932) 83 8 84 6
University of Rochester School of Medicine (1932) 87 4 88 7
University of Cincinnati College of Medicine (1933) 87 7
University of Oklahoma School of Medicine (1933) 86 9
University of Oregon Medical School (1932) 84
University of Pennsylvania School of Medicine (1932) 78 8 1 83 1 88 3
Marquette University School of Medicine (1933) 82 2
University of Toronto Faculty of Medicine (1933) 81
McGill University Faculty of Medicine (1931) 87 7
Karl Franzens Universität Medizinische Fakultät (1933) 81 9
Austria
Medizinische Fakultät der Universität Wien (1928) 75 2
Regia Università di Milano degli studi Facoltà di Medi (1932) 78 1
cina e Chirurgia, Italy (1928) 80 1

College	FAILED	Year Grad	Per Cent
College of Medical Evangelists (1933)	77 7	(1933)	77 7
American Medical Missionary College Chicago (1902)	53	(1902)	53
Univ of Santo Tomas College of Medicine and Surgery (1924)	67 8	(1924)	67 8
Charkovsky Universitet Russia (1923)	66 7	(1923)	66 7
Psycho-Neurological Institute Medical College Russia (1917)	70 3	(1917)	70 3

Twenty physicians were licensed by reciprocity and 8 by endorsement from July 21 to August 31. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Bennett College of Eclectic Med and Surg Chicago (1905)	(1905)	Illinois	
Rush Medical College (1890)	(1890)	Colorado	
Univ of Illinois College of Medicine (1915)	(1915)	Illinois	
Indiana University School of Medicine (1938)	(1938)	Utah	
Tulane University of Louisiana Medical Department (1898)	(1898)	Arkansas	
Detroit College of Medicine and Surgery (1927)	(1927)	Michigan	
St Louis University School of Medicine (1923)	(1923)	Illinois	
Washington University School of Medicine (1929)	(1929)	Missouri	
Creighton University School of Medicine (1924)	(1924)	Montana	
New York University University and Bellevue Hospital Medical College (1922)	(1922)	Washington	
University of Cincinnati College of Medicine (1924)	(1924)	Minnesota Ohio	
Western Reserve University School of Medicine (1924)	(1924)	Ohio	
University of Oklahoma School of Medicine (1932)	(1932)	Oklahoma	
University of Pennsylvania School of Medicine (1931)	(1931)	Ohio	
University of Tennessee College of Medicine (1918)	(1918)	W Virginia	

College	LICENSED BY ENDORSEMENT	Year Endorsement	Grad of
College of Medical Evangelists (1931)	(1931)	N B M Ex	
University of California Medical School (1932)	(1932)	U S Navy	
University of Southern California School of Medicine (1933)	(1933)	U S Navy	
George Washington University School of Medicine (1931)	(1931)	N B M Ex	
Northwestern University Medical School (1933)	(1933)	U S Navy	
University of Illinois College of Medicine (1929)	(1929)	U S Navy	
Harvard University Medical School (1915)	(1915)	N B M Ex	
New York University University and Bellevue Hospital Medical College (1929)	(1929)	U S Navy	

* This applicant has received an MB degree and will receive an MD degree on completion of internship
† Verification of graduation in process
‡ Fell below 60 per cent in 2 subjects

Indiana June Examination

Dr William R Davidson, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held in Indianapolis, June 20-22 1933. The examination covered 16 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and twenty one candidates were examined, 115 of whom passed and 6 failed. The following colleges were represented

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School (1932)	83 7	(1933)	89 8
Rush Medical College University of Chicago (1931)	87 4 (1932) 88 7 (1933) 87 8 8	(1930)	83 6
School of Medicine of the Division of the Biological Sciences University of Chicago (1933)	84 3	(1931)	84 3
Indiana University School of Medicine (1932)	82 4 82 8 (1933) 77 7 77 8 77 8 78 7 79 3 79 5 79 6 79 8 79 9 80 3 80 3 80 4 80 1 80 6 80 7 80 7 80 8 80 9 81 3 81 5 81 5 81 5 81 6 81 6 81 6 81 7 81 8 81 9 81 9 82 1 82 2 82 3 82 3 82 4 82 5 82 5 82 6 82 7 82 7 82 7 82 9 83 81 83 2 83 2 83 3 83 4 83 4 83 5 83 5 83 5 83 6 83 7 83 7 83 7 83 8 83 8 83 9 84 8 84 6 84 7 84 7 84 8 84 9 84 9 85 8 85 1 85 3 85 3 85 3 85 4 85 7 85 8 85 8 85 9 85 9 85 9 86 1 86 1 86 1 86 4 86 4 86 7 86 7 86 8 87 4 87 4 87 6 88 2 88 5 90 4	(1932)	85 4
University of Louisville School of Medicine (1933)	84	(1933)	85 9
Tulane University of Louisiana School of Medicine (1933)	85 2	(1930)	85 2
University of Minnesota Medical School (1929)	90 6	(1933)	87 6
Washington University School of Medicine (1933)	86 8	(1932)	86 8
University of Wisconsin Medical School (1932)	84 6	(1932)	84 6
University of St Andrews Conjoint Medical School (1932)	85 8 88 1 88 2	(1932)	84 6
Osteopaths			85 8 88 1 88 2

College	Year	Number
	Grad	Failed
Indiana University School of Medicine	(1933) 4	1
University of Louisville School of Medicine	(1933)	4
University of Michigan Medical School	(1933)	1

* This applicant has received an M B degree and will receive an M D degree on completion of internship
† No average grade reported
‡ This applicant has completed his medical course and will receive his M D degree in June, 1934, and Indiana license when diploma is presented
§ Verification of graduation in process

New Hampshire September Report

Dr Charles Duncan, secretary, Board of Registration in Medicine, reports the oral written and practical examination held at Concord, Sept 15-16 1933. Six candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity and 3 by endorsement. The following colleges were represented:

College	PASSED	Year	Per Cent
Tufts College Medical School		(1932)	88
University of Pennsylvania School of Medicine		(1931)	92
McGill University Faculty of Medicine	(1931) 87	(1933)	76
University of Montreal Faculty of Medicine	(1932) 83	(1933)	83

College	LICENSED BY RECIPROCITY	Year	Reciprocity
		Grad	with
College of Medical Evangelists		(1932) Dist Colum	
University of Colorado School of Medicine		(1932) Colorado	
Georgetown University School of Medicine		(1930) Mass	
Boston University School of Medicine		(1931) Hawaii	
Harvard University Medical School		(1925) New York	
Detroit College of Medicine		(1901) Michigan	
University of Pittsburgh School of Medicine		(1926) Penna	
Medical College of Virginia		(1931) Virginia	

College	LICENSED BY ENDORSEMENT	Year	Endorsement
		Grad	of
Tulane University of Louisiana School of Medicine		(1931) N B M Ex	
Boston University School of Medicine		(1928) N B M Ex	
McGill University Faculty of Medicine		(1931) N B M Ex	

Book Notices

How to Stay Young By Robert Hugh Rose M B M D Cloth Price \$1.50 Pp 195 New York & London Funk & Wagnalls Company 1933

Here is a book that is full of facts and almost as full of erroneous deductions from them. No one can deny the importance of diet as a hygienic factor, but, on the other hand the author will find few who will agree with him that merely by eating properly one can make 70 the prime of life even though Chauncey Depew, Thomas A Edison, Henry Ford, John D Rockefeller, Clemenceau, Hindenburg, Mellon and other distinguished moderns have expressed their opinions to that effect. The author quotes their interviews frequently from popular lay periodicals. He lays great stress on the sixteenth century writings of Louis Cornaro whom he calls the father of life extension. He stresses the alleged longevity of Bulgarians and concludes that fermented milk is the cause of their long life. He proposes that by combining the good features of New Zealand's healthy regimen with those of Bulgaria we could extend our own average length of life and increase the proportion of our population to 90 or 100 years of age. In a chapter entitled 'Eat Your Way to Youth' he says that nutrition 'is the most important factor in maintaining youth and prolonging life'. The diet that he recommends is an excellent one, laying proper emphasis on milk, fruit, green vegetables and variety. He does not fall into the fallacy of vegetarianism or any of the more grotesque dietary fads. There is so much good in the book that it is unfortunate that he has overemphasized diet and that in writing to his title he has whether consciously or not produced a work which will undoubtedly have a sales appeal at the expense of scientific accuracy.

Part two of the book is worse than part one. Here he extols methods of rejuvenation including gland grafting and then attempts to link faulty diet in a causative relationship with endocrine disturbances. He attributes the prevalence of retro intestinal carcinoma to faulty diet. He overemphasizes the effectiveness of vaccines in the prevention of colds. In a chapter on moderation he emphasizes the importance of the golden mean but he does not seem to be able to observe this principle in arriving at conclusions from unquestioned facts.

A Study of Rural Public Health Service for the Committee on Administrative Practice of the American Public Health Association by the Sub Committee on Rural Health Work Edited by Allan W Freeman M D Cloth Price \$2.50 Pp 235 New York Commonwealth Fund London Oxford University Press 1933

The Committee on Administrative Practice of the American Public Health Association sponsors this study of health work in rural regions in the United States. The material is based on a study of forty-six counties which were surveyed in detail by field workers for the committee. Of these, twenty-seven were organized that is to say, had an organized county health department under the direction of a full-time medical health officer, with a staff of one or more nurses, inspectors, clerks and other full-time employees. The remaining nineteen counties were unorganized having various types of part-time health service or virtually no health service except in name. In addition a questionnaire was sent to 467 county health officers in thirty-four states where a full-time county health service was in operation in 1929, and 337 counties, including the twenty-seven surveyed, supplied information suitable to permit of tabulations. In a brief review it is impossible even to mention all the activities that have been surveyed or the conclusions arising from the survey. In general the study developed what might have been expected, that counties with full-time health organizations get better health service than those without, and also spend more money for health promotion. Even in the best organized counties where the newer health promotion activities have been developed such as maternal and infant hygiene and school health supervision there still remains much to be accomplished in elementary public health activities such as general sanitation, communicable disease reporting and control, reporting of vital statistics, and control of food and water supplies. Of the 3000 counties in the United States, only about 500 have reasonably well organized public health service. In the others, such service remains to be developed. The committee study did not take into consideration public health work done by county medical societies. Presumably this is not a significant factor in rural regions. It is in precisely these areas that the family physician will find the best opportunity for extending his practice in the fields of preventive medicine and public health.

The Health of Workers in a Textile Plant By Rollo H Britten Senior Statistician J J Bloomfield Sanitary Engineer and Jeanie C Goddard Junior Statistician U S Public Health Service United States Treasury Department Public Health Service Public Health Bulletin No 207 Prepared by direction of the Surgeon General Paper Price 5 cents Pp 26 with 6 illustrations Washington D C Supt of Doc Government Printing Office 1933

The Health of Workers in Dusty Trades. General Statement and Summary of Findings. III Exposure to Dust in Coal Mining. IV Exposure to Dust in a Textile Plant. V Exposure to the Dust of a Silverware Manufacturing Plant. VI Exposure to Municipal Dust (Street Cleaners in New York City). From the Office of Industrial Hygiene and Sanitation United States Public Health Service United States Treasury Department Public Health Service Public Health Bulletin No 205 Prepared by direction of the Surgeon General Paper Price 5 cents Pp 37 Washington D C Supt of Doc Government Printing Office 1933

Mortality of Coal Miners By Dean K Brundage Statistician Office of Industrial Hygiene and Sanitation United States Public Health Service United States Treasury Department Public Health Service Public Health Bulletin No 210 Prepared by direction of the Surgeon General Paper Price 5 cents Pp 17 Washington D C Supt of Doc Government Printing Office 1933

These three bulletins together with two others (numbers 176 and 187) constitute a series of studies dealing with exposure to the hazards of dusty occupational environments. They show that the mortality of coal miners from influenza and pneumonia is higher than that of the general population not only during epidemics but at other times. Mortality from respiratory tuberculosis was found to be definitely low among bituminous miners but not among anthracite miners. Deaths from all respiratory diseases are high among anthracite miners. The findings in America are similar to those among anthracite miners in Wales and to the findings among bituminous miners of England and Wales.

The study on dust in textile industries shows that dust is not important in this industry but that high temperature and humidity may be of importance although this study does not bring out any definite proof of excessive mortality due to these conditions. This confirms similar observations by English investigators.

The report on the health of workers in dust trades indicates that the usual division into dusty and nondusty trades has no great meaning, but, more specifically, one must know what is the quantity of dust in the air and what is its composition especially the percentage of free silica in the form of quartz. The results, sickness surveys, dust samplings, physical examinations and a limited number of roentgen studies are detailed.

These three reports deserve a place in the library of every physician who is interested in industrial hazards, especially those involving dust, high temperature and humidity.

Reports of the Committee Upon the Physiology of Vision. XI. Individual Differences in Normal Colour Vision. A Survey of Recent Experimental Work (1910-31). By W. O. D. Fries. Medical Research Council Special Report Series No. 181. Paper. Price 2s. 1p. 91 with 22 illustrations. London: His Majesty's Stationery Office, 1932.

This is a survey of the experimental work between 1910 and 1931 and a review of the literature dealing with color vision, compiled by the author for the National Institute of Industrial Psychology. In consequence the bibliography is extensive comprising 101 references and seemingly complete. The material is divided into seven sections dealing with brilliance or luminosity discrimination, saturation discrimination, chromatic sensibility, differences in after excitation phenomena, differences in the color field, color anomalies and other color vision experiments. Conclusions cannot be arrived at in a work of this character, but the four definitions of terminology adopted by the American Optical Society and reprinted in the pamphlet may well be quoted here.

Color is defined as the general name for sensations arising from the activity of the retina and its attached nervous mechanism, this activity being in nearly every color normal individual a specific response to radiant energy of certain wavelengths and intensities.

Brilliance is that attribute of any color in respect to which it may be classed as equivalent to one member of a series of grays.

Hue is that attribute of certain colors in respect to which they differ from a gray of the same brilliance.

Saturation is that attribute of all colors possessing a hue which determines their degree of difference from a gray of the same brilliance.

This is essentially a reference pamphlet for all but those who are working in that special field, and it contains much valuable information.

Report to the United States Government on Tuberculosis with Some Therapeutic and Prophylactic Suggestions. By S. Adolphus Knopf, M.D. Revised and Enlarged Report Submitted to the State Department, War Department and War Veterans Bureau as Government Delegate to the International Union Against Tuberculosis Held at The Hague, Sept. 6-9, 1932. By S. Adolphus Knopf, M.D. Cloth. Price \$1.10. Pp. 58 with 54 illustrations. New York: National Tuberculosis Association, 1933.

This is a report to the United States government and specifically to the Secretary of State, the Surgeon General of the United States Army, and the Director of the War Veterans Bureau, of the author's experiences as official delegate to the eighth conference of the International Union Against Tuberculosis, held at The Hague in 1932. It deals with a discussion of gold therapy recommending that further experimentation be limited to an international committee which will conduct such experimentation under careful control. 'We may thus obtain such reasonable certainty as is humanly possible as to the real value of this new and costly remedy. Until then, let the poor consumptives keep their gold in their pockets instead of having it injected into their veins.'

The author describes the after-care of the tuberculous civilian and ex-soldier in Europe and the United States pointing out particularly the need for more rehabilitation institutions for the convalescent patient such as the New York Workshop for the care of the Jewish tuberculous in New York, the Tomahawk Lake Camp, operated by the state of Wisconsin, the Potts Memorial Hospital, and others. He includes chapters on massage, hydrotherapy, respiratory therapy and especially, diaphragmatic respiration, which the author himself first suggested. There is also a chapter on special exercises and one on skin tuberculosis, with particular reference to the salt-free diet. As a summing up of the present status of the tuberculosis problem this is a valuable monograph.

Diphtheria Immunization Propaganda and Counter Propaganda. Compiled by I. Greenwood Wilson, M.D., M.R.C.P., D.P.H. Preface by J. Graham Forbes, M.D., F.R.C.P., D.P.H. Paper. Price 2/6. Pp. 11. Densbury, England: Joseph Ward & Company, 1933.

Dr. Wilson has faithfully recorded by reprinting all documents concerned, his controversy with the 'antis' over diphtheria immunization. His technique is not that of his opponents who reprint from medical literature only what serves the ends of their propaganda. His book proves that the antivaccinationists, the antivivisectionists and their like wherever they may be found, are like 'the Colonel's lady and Judy O'Grady sisters under their skins'. British or American, they go to the ends of the earth to find the few regrettable accidents that have occurred in connection with immunization and gloat over them. They display the same cynical disregard for accuracy in England as in the United States, even while using facts to malign truth. Dr. Wilson was attacked, and was compelled to defend himself, which he did with shrewdness, wit and a great deal more good humor than his adversaries, even after his personal motives had been impugned. One leaves the book with a depressing sense of the futility of argument with fanatics whose minds are dominated by their emotions and who are absolutely impervious to reason. In a difficult position Dr. Wilson, subjected to the needless additional disadvantage of having one of his friends support him anonymously and thus give the 'antis' fresh opportunities which they were not slow to use acquitted himself well. The book should be useful to his colleagues in public health work on both sides of the ocean, as well as of interest to practicing physicians. Especially pertinent is the remark made by Dr. Wilson that the private practitioner could have done the immunizing better and not have been subjected to such public baiting as was the medical officer of health. This is but another demonstration of the necessity for maintaining the personal relationship between patient and physician.

Atlas of Otology Illustrating the Normal and Pathological Anatomy of the Temporal Bone. By Albert A. Gray, M.D., F.R.S.E. Volume II. Cloth. Price 26s. Pp. 72 with 92 illustrations including 33 stereoscopic photographs. Glasgow: Jackson, Wylie & Company, 1933.

As the author states: "Since the first volume of this work was published eight years ago, the author has accumulated a considerable amount of new material which he hopes may justify the publication of the second volume. The material from which the illustrations for this second volume have been made has been obtained from both normal and pathological conditions, as was also the case in regard to the first volume." This atlas is a sumptuous and beautiful work consisting of ninety-two reproductions of illustrations of microscopic sections of various portions of the ear particularly the inner ear. A considerable number are stereoscopic. The first section of the book has twenty-four illustrations of normal anatomy, while the second section contains sixty-eight illustrations covering many phases of the pathologic anatomy. One may always be sure that any publication by Albert A. Gray will be most valuable, and the present work is no exception to that rule. It represents a stupendous amount of careful work, beautifully executed and exceedingly instructive. It is difficult to conceive how any more valuable atlas could possibly be devised. Its study by all who are interested in otology is highly recommended.

The Physical Mechanism of the Human Mind. By A. C. Douglas, M.B., Ch.B., Hon. Surgeon, Dunfermline and West Fife Hospital. Cloth. Price \$2.00. Pp. 201 with 24 illustrations. Baltimore: William Wood & Company, 1933.

The vast knowledge disclosed in the past few years in the field of neuro-anatomy and physiology would limit the utility of any work that tends to oversimplify the explanation of nervous phenomena. After criticizing psychology as a science, the author of this work takes a number of discrete facts from it and from physiology in an effort to show that the study of mind can be scientific—that expansion of the simple reflex arc with various neuron combinations explains how the mind works. Examples from simple biologic forms demonstrate the increase in complexity of behavior, and the author uses neurologic principles in the manner of elementary textbooks of physiology. When the author studies higher mechanisms than the stepping

reflex of the dog, he develops complicated explanations although still adhering to reflexology as his basic method. He illustrates his theory by means of diagrams designed to show the passage of the nervous impulse from the point of origin to the point of motor outlet, through reciprocal innervation, through the thalamic reflex system (omitting the "emotional" features of the basal ganglions), through cerebral reflexes, in an endeavor to explain gross bodily behavior and emotion. The later discussions depend on the concept of the conditioned reflex. The last part of the book is a combination of William James's psychology with some ideation drawn from the gestalt psychology, which results in explanations of thinking processes such as memory, thought, belief, reason, will and imagination, which do not fit the facts of modern comparative psychology. For example, he makes such statements as "Thought, or imagination, is merely inhibited action." The author does not refer to the experimental work done on animals, he is naive in his attitude toward inhibitory processes in the central nervous system, and he seems to know only the most popular work of Herrick and nothing of Morat, Lillie, Pike and many other experts in the field. The author states that the book will be useful for the nonspecialist, but his use of technical physiologic terms, philosophic concepts and neologisms makes it difficult for one to see exactly to what elementary student the book would be useful. Physiologists may find it an interesting attempt to simplify neurophysiology, but they and the psychologists will find the author's knowledge in their fields incomplete.

The Nervous Child at School By Hector Charles Cameron M.A. M.D. FRCP. Physician in Charge of the Children's Department Guy's Hospital. Cloth Price \$1.00 1p 160 New York & London Oxford University Press 1933

Many medical men are familiar with the author's previous works on nervous disorders of the nursery. As a sequel to this work he now offers the nervous disorders of the child at school. The author does not wish to emulate the serial narrative propensities of fiction writers but presents such advances in child psychiatry as have taken place since the last work was published. The author sets forth in simple language the common disorders that are manifested by the nervous child at school. Fatigue in school life and its attendant disturbances, the training in the home as a preliminary to school and the disorders of conduct that result from faulty adaptation are clearly presented. While the social conditions that surround children are different in England, the general facts are of interest both to the public and to the physicians of this country. This small book contains an interesting and lucid discussion of the problem of the nervous child at school and is highly recommended to the parent, teacher and physician who eventually share it.

Marie Stopes Her Work and Play By Wylmer Maude. Authorized edition. Cloth Price \$3. Pp 294 with illustrations. New York G. P. Putnam's Sons 1933

This is a biography by a disciple of an interesting woman with a mission. Dr. Stopes is a woman with an original, strong mind who worked in the biologic sciences. She became engrossed with the difficult problems of sex, particularly marriage, maternity and parenthood, and stepped into leadership in birth control with her book "Married Love." She is an engaging personality, and the book is an interesting and sympathetic account of her life as far as it has been lived for she is still an active worker. The later chapters of the book are given to the ups and downs of the birth control movement in recent years.

The Clinical Study and Treatment of Sick Children By John Thomson M.D. F.R.C.P. Fifth edition re-written and enlarged by Leonard Hindley M.D. B.S. M.R.C.P. Physician Princess Elizabeth of York Hospital for Children London. Cloth Price 30/- 1p 1075 with 344 illustrations. Edinburgh & London Oliver & Boyd 1933

The fifth edition of the late Dr. John Thomson's textbook on *The Clinical Study and Treatment of Sick Children* has been prepared by Dr. Leonard Hindley. While the book has been extensively revised since the first edition eight years ago the distinctive style of the text and the manner of presentation are essentially the same. Most of the revised data are concerned with the biochemical aspects of diseases as they occur in child-

hood nutritional diseases, rheumatic fever and tuberculosis. The latter chapter is particularly up to date and comprehensive. However, such statements as "It can, we think, be laid down as a general law that pulmonary tuberculosis during childhood does not heal but is almost invariably fatal" and "pulmonary tuberculosis is preeminently a disease of infancy and early childhood" will hardly find general acceptance. Other statements are open to controversy but on the whole the author has succeeded in perpetuating a text that has enjoyed a considerable popularity. It is not recommended to those who are interested in a didactic discussion of diseases in childhood. The manner of presentation presumes a working knowledge of general medicine and will probably find its greatest usefulness in the hands of the practitioner of medicine. The illustrations are adequate and well done.

History and Source Book of Orthopaedic Surgery By Edgar W. Bick M.A. M.D. Adjunct Orthopaedic Surgeon Hospital for Joint Diseases New York City. Cloth Pp 254 with illustrations. New York The Hospital for Joint Diseases 1933

The author presents in one volume a history of orthopedic surgery from ancient times up to the present. In his introduction he states that the book makes one realize to what a remarkable degree the men of former times, with their meager physical equipment, developed their skill in the absence of modern technique. The important points of each subject are put in the form of a historical summary. The book might be considered a companion volume to Sir Arthur Keith's *Menders of the Maimed*. Unfortunately, it is printed in typewritten form and closely spaced. It is this type of book which confirms the statement that the new in medicine is the old that has been forgotten.

Medicolegal

Workmen's Compensation Acts **Compensability of Poison Oak Poisoning**—In the course of his employment, a workman came into contact with poison oak. Dermatitis venenata followed and he was disabled for about nineteen days. The Oregon industrial accident commission contended that the claimant's disease was idiopathic, not traumatic, and that it therefore was not compensable. The commission was guided apparently by an excerpt from *Corpus Juris*, an exact citation to which is not given in the reported case, reading, in part, as follows:

An idiopathic disease in the sense in which the term is used in the discussion of the cases arising in this connection is one which develops gradually or at least imperceptibly and while it may be attributable to external conditions is also dependent in part on conditions inherent in the individual.

The evidence, said the Supreme Court of Oregon, shows that contact with poison oak or poison ivy by persons susceptible to poisoning by them causes the disease known as dermatitis venenata, in one or two days after contact. The disease is attributable to external conditions. It is not dependent on conditions inherent in the individual, except that some persons are not susceptible to it. It therefore does not fall within the definition of an idiopathic disease in the sense in which that term is used in *Corpus Juris*, as a disease not compensable under the statute.

To recover compensation under the workmen's compensation act, said the Supreme Court, an employee must have sustained by accident arising out of and in the course of his employment, personal injury caused by violent or external means and causing disability. In the present case, the disease was not an occupational disease in the sense that it was the natural and unavoidable result of the employment. The claimant's contact with the poison oak brush happened by chance, he was in ignorance of its character, the contact was involuntary and unintentional on his part, and the result was unexpected. The contact arose out of and in the course of his employment and resulted in his disability. It was not an accident caused by violence, but it was caused by external means.

It has been held that disability resulting to a workman from contact with poison ivy is compensable under workmen's com-

pensation acts *Dent v. Railway Mail Ass'n* (C. C.) 183 F. 840, *Railway Mail Ass'n v. Dent* (C. C. A.) 213 F. 981, L. R. A. 1915A, 314, *Plass v. Central New England R. Co.*, 169 App. Div. 826, 155 N. Y. S. 854, *Sharon v. Town of Boonville*, 32 State Dept. Rep. (N. Y.) 545. The effect of poisoning from poison oak and poison ivy on the human skin and the disease condition resulting from them are shown to be identical. A workman is as much entitled to compensation in the one instance as in the other. The award of compensation was accordingly affirmed—*Banister v. State Industrial Accident Commission of Oregon* (Ore.), 19 P. (2d) 403.

Construction of a Constitutional Medical Practice Act by State Court Binding on Federal Court Cults Need Not Be Named in Act—Certain chiropractors not licensed to practice in Pennsylvania filed a bill in the United States district court to restrain the Pennsylvania bureau of medical education and licensure from enforcing against them the penalties of the medical practice act unless and until the laws of the state provided specifically for the regulating and governing of the practice of chiropractic. They alleged that chiropractic is a healing art distinct from other healing professions, that the medical practice act provides for the licensing of practitioners of medicine and surgery, that the courts of Pennsylvania construe the medical practice act as embracing chiropractic, although there is no provision in the act whereby chiropractors may obtain licenses to practice their calling, and that by being required to obtain licenses "when in fact such a license cannot be obtained" their privileges and immunities as citizens of the United States had been abridged and they had been denied the equal protection of the laws and deprived of their property without due process of law, in violation of the fourteenth amendment of the United States constitution. The United States district court sustained a demurrer by the licensing bureau, and the chiropractors appealed to the United States circuit court of appeals, third circuit. They admitted, apparently, that the medical practice act construed as they would have it construed, was constitutional but they argued that as construed by the Supreme Court of Pennsylvania it was unconstitutional.

This bill, said the United States circuit court of appeals, presents something of a paradox in jurisprudence. While expressly disclaiming an attack on the constitutionality of the medical practice act, it seeks relief in a federal tribunal from the construction which the state courts have placed on the act, on the theory that the construction they have placed on the act is in contravention of the constitution. A federal court may restrain a state agency from enforcing an unconstitutional state statute, but it has no power to restrain the enforcement of a constitutional statute in the way in which the highest courts of the state have construed it. The circuit court of appeals held, therefore, that it was without power to grant the relief sought by the chiropractors.

The court, however, because of the earnest presentation of the case for the chiropractors, undertook to discuss and decide the question raised by them. The medical practice act of Pennsylvania, said the court, relates to the art of relieving and curing human ills commonly referred to as the "healing art." Of that art, the chiropractors admit themselves to be practitioners. The "healing art" is a generic expression and ordinarily embraces the entire art of healing and its many theories and practices. It falls clearly under the police power of the state. A state may exercise its police power by a system of regulation and control, which, if not unreasonable and arbitrary, is lawful and is binding on every one in the state. To assure its citizens skilled treatment of their ills by qualified practitioners, and particularly to guard them against malpractice by ignorant and unskilful practitioners, the state, acting within its police power, provided a general system for completely regulating the healing art, referring to it as the practice of medicine

and surgery." That a state may thus regulate the practice of medicine, using this word in its most general sense, can no longer be questioned.

It cannot be successfully asserted that the state was arbitrary or unreasonable in requiring that all who deal with the human body, diagnose its ills, and offer their services to the public, shall have the qualifications which the state by this act requires of them. The chiropractors in this case complain that the practice of chiropractic, though a healing art, has nothing in common with drugs, medicine or surgery, and that it is not "the practice of medicine and surgery," as the healing art is defined by the act. They claim that there is no law in respect to their branch of the healing art and that they may therefore lawfully practice their calling without licenses from the bureau of medical education and licensure and without subjecting themselves to criminal prosecutions. But, said the circuit court of appeals, the Pennsylvania courts have declared that the words practice of medicine and surgery "are taken in their most comprehensive sense whether with the aid of drugs or by any other remedial agencies whatever," and squarely hold that the practice of chiropractic, though not named therein, is comprehended in the expression "practice of medicine and surgery." When the highest court of a state construes a state statute enacted under the state's police power, the statute means what the court says it means. The construction by the court becomes a part of the statute, and the statute speaks as the court has construed it. The scope and effect of such a law, as distinguished from its constitutionality, are state questions, as to which the decisions of the state court of last resort are controlling. They are binding on all federal courts in which such construction is involved, whether they agree with it or not.

Accordingly, the decree of the district court dismissing the chiropractors' bill was affirmed—*Steinback v. Metzger* (C. C. 1) 63 F. (2d) 74.

Medical Practice Acts Discretion of Jury in Revoking Physician's License—The Georgia medical practice act (Park's Code Supp. 1922, Sec. 1697[m]) provides that, if a licensee has been convicted of a crime involving moral turpitude, the board of medical examiners may revoke his license. A licensee whose license has been revoked may appeal to the appropriate superior court, which will try the cause de novo. Under the statute, said the court of appeals of Georgia, division No. 2, the exercise of the board's power to revoke a license is discretionary with the board. When a license has been revoked, an appeal to the superior court is a new proceeding and it is discretionary with the jury whether or not to revoke the appellant physician's license. In a hearing on such an appeal, therefore, it is error for the court to instruct the jury to revoke a physician's license. In the present case, the physician had been convicted of making a false certificate of death in a claim filed under a life insurance policy, a crime involving moral turpitude. The board revoked his license, and he appealed to the superior court Floyd County, where the cause was tried de novo. The trial court excluded evidence in mitigation of the charge, which tended also to establish the appellant's innocence. This was error, said the court of appeals. Such evidence was competent and relevant to the issue and might have influenced the jury in the exercise of its discretionary power to revoke the defendant's license—*Smith v. State Board of Medical Examiners* (Ga.) 167 S. E. 769.

Society Proceedings

COMING MEETINGS

Medical and Surgical Association of the Southwest El Paso, Texas
Dec. 7-9 Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz.
Secretary
Philippine Islands Medical Association Manila, Dec. 12-15 Dr. Antonio S. Fernando, 817 Taft Avenue, Manila, Secretary
Society for the Study of Asthma and Allied Conditions New York
Dec. 9 Dr. W. C. Spain, 116 East 33d Street, New York, Secretary
Southern Surgical Association Hot Springs, Va., Dec. 12-14 Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary
Western Surgical Association Cincinnati, Dec. 8-9 Dr. Frank R. Tenchener, 306 East 12th Street, Kansas City, Mo., Secretary

1 The State Board of Medical Education and Licensure of Pennsylvania is authorized to license any person pretending to a knowledge of any branch or branches of medicine and surgery and to issue certificates authorizing limited practice. Purdon's Pennsylvania Stats. 1930 title 63 ch. 10 sec. 408.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

3 37 88 (Aug) 1933

The Nature and Course of Bright's Disease J S McLester Birmingham—p 37

Bright's Disease Grades of Severity Evaluation Outlook M A Maas Selma—p 39

Treatment of Bright's Disease F Wilkerson Montgomery—p 42

Acute Osteomyelitis A S Frasier Dothan—p 45

American Journal of Ophthalmology, St Louis

16 571 668 (July) 1933

Kayser Fleischer Ring in Wilson's Disease Report of Case F L Dunnavan and M P Motto Cleveland—p 571

Critical Values for Limits of Color Fields in Eight Principal Meridional Quadrants Taken Separately C E Ferree and G Rand Baltimore and M M Monroe Charlotte N C—p 577

Improved and New Test for Stereoscopic Vision F H Verhoeff Boston—p 589

Hysteric Amblyopia Report of Three Cases F C Cordes and W D Horner San Francisco—p 592

Intracapsular Extraction of Crystalline Lens Containing a Foreign Body Report of Three Cases B Chance Philadelphia—p 597

Cross Cylinder E Jackson Denver—p 600

Extraction of Congenital and Young Adult Traumatic Cataract by the Method of Barkan J Green and C Beisbarth St Louis—p 603

Ocular Disturbances in Epidemic Encephalitis C P Clark Indianapolis—p 606

*Studies of Retinopathies I Diabetes Mellitus E B Gresser New York—p 612

Retinopathies and Diabetes Mellitus—In a study of 100 cases of diabetes mellitus Gresser correlates the clinical signs of hypertension, retinal vascular sclerosis and abnormal urinary elements, together with age and duration of the disease state. The cases are divided into three general classes: group 1, retinal pathologic conditions; group 2, sclerosis of the retinal vessels; and group 3, cases without discernible changes in the vessels or retinal elements. Of group 1, 38 per cent presented a retinopathy in which sclerosis and hypertensive signs in the vessels were almost uniformly present. Associated nephritic lesions appeared in 23.5 per cent of which 10.2 per cent were classed as chronic diffuse glomerular nephritis and 7.7 per cent referred to renal changes in nephrosclerosis. Of group 1, 7.2 per cent were noted as having benign hypertension. The average age for this group was 55.13 years and the diabetic state averaged 7.34 years. The retinopathy seen in these diabetic patients did not conform to one clear picture; no entity having been established. The majority showed characteristics of hypertensive retinitis both vascular and exudative. No relationship was seen between the presence of retinopathy and the severity of diabetes. Signs of retinal vascular sclerosis without other vascular or retinal changes were present in 30 per cent. All of these (group 2) were free from renal disease and permanent hyperopia was absent. The average age in this group was 55.3 years and the duration of the diabetic state was 5.77 years. It was apparent that the duration of the diabetic state was not a direct factor in the production of retinal pathologic changes. Group 3 showed no alterations in the retinal vessels or tissues. Blood pressure ranges were entirely normal and the urinary pictures always negative (sugar excepted). The average age was 31.1 years and the duration of diabetes was 4.5 years.

American Journal of Pathology, Boston

9 393 518 (July) 1933

Renal Lesions Associated with Multiple Myeloma E T Bell Minneapolis—p 393

*Neuroblastoma Metastases in Bones with Criticism of Ewing's Endothelioma H C Colville and R A Willis Melbourne Australia—p 421

Extreme Alteration of Aortic Valve in Syphilitic Aortitis O Saphir and J Stasney, Chicago—p 431

Rheumatic Heart Disease Without Valvulitis C Z Garber, Peiping China—p 443

*Percentage of Different Types of Cells in Anterior Lobe of Hypophysis in the Adult Human Female A T Rasmussen Minneapolis—p 459

Relation of Hepatitis to Cholecystitis J F Noble Minneapolis—p 473

*Calcified Epithelioma of Skin K Y Chin Peiping China—p 497

Sarcomatoid Metastases in Lymph Nodes Draining Primary Carcinoma with Sarcomatoid Stroma R B Greenblatt, Montreal Canada—p 525

Neuroblastoma Metastases in Bones—Colville and Willis describe a case in which a tumor presenting all the accepted characteristics of Ewing's sarcoma of the bone was shown at necropsy to be one of many metastases from a suprarenal neuroblastoma. A review of certain adequately recorded necropsy cases of supposed multiple bone sarcomas leads to the conclusion that these also were instances of suprarenal neuroblastoma with skeletal metastases. The term "Ewing's sarcoma," while possessing clinical value as defining a syndrome presented by a certain group of tumors affecting bones, has no established claim as designating a pathologic entity. While not denying the possible existence of a primary bone tumor presenting the Ewing syndrome, the authors believe that further study will disclose the metastatic nature of most of the tumors with this syndrome, and they strongly suspect that suprarenal neuroblastomas will prove to be the primary growths in many of the cases.

Types of Cells in Hypophysis in Women—Rasmussen determined the relative number of chromophobes, acidophils and basophils in the anterior lobe of the hypophysis of ninety-four carefully selected and supposedly normal, formaldehyde-fixed hypophyses of nonpregnant women from 16 to 84 years of age from cases of sudden or accidental death, and of twenty-five pregnant women from 15 to 39 years of age. The data were obtained by counting all the cells containing nuclei in an average of 214 equally spaced microscopic fields from three different, well separated sections 5 microns in thickness from each hypophysis and by using Mallory's connective tissue stain after slight staining with hematoxylin to bring out the nucleus. In the group of nonpregnant women the chromophobes average between 49 and 50 per cent of all the cells with a coefficient of variation of 14, the acidophils average between 43 and 44 per cent, with a coefficient of variation of 19 and the basophils average 7 per cent, with a coefficient of variation of 42. These figures are radically different from those given for a mixed group of women and a group of female dementia praecox cases by McCartney, in both of which he reports three times as many basophils and only half as many chromophobes. Women more than 50 years of age show an average of 4 per cent more chromophobes, nearly 2 per cent more basophils and 6 per cent fewer acidophils than those below 50 years of age. There is no correlation between body length and any particular type of cell. While there are on an average relatively fewer acidophils and more chromophobes in the pregnant women than in the nonpregnant the differences are too small to be statistically significant. Contrary to the opinion of many, the enlargement of the anterior lobe of the hypophysis during pregnancy is apparently not due to marked hyperplasia of any one of the three generally recognized types of cells nor could a special so-called pregnancy cell be identified. Women have a distinctly higher proportion of acidophils than men, and men have a higher percentage of chromophobes and basophils.

Calcified Epithelioma of Skin—Chin reports ten cases of calcified epithelioma of the skin examined in the pathologic laboratory of the Peiping Union Medical College. These tumors form a distinct group of neoplasms that are anatomically and clinically well defined. They are circumscribed, well encapsulated growths beneath the skin consisting of lobulated epithelial masses with a network of usually hyalinized fibrous stroma. The epithelial cells are small, oval, deeply staining and closely packed and have a marked tendency to undergo necrosis, calcification and ossification. The author's study of his ten cases and the 116 cases that he collected from the literature indicate that they are distributed most frequently on the head and neck and occur usually among younger persons. The majority of these tumors are benign but a few cases of recurrence following removal have been recorded.

American Journal of Physical Therapy, Chicago

10 136 (July) 1933

- Amputation of the Cervix by Electrocoagulation G A Remington Chicago—p 5
 Arthritis and Diet Therapy D E Lane—p 9
 Use of Galvanic Current in Atrophic Rhinitis J S Stovin New York—p 11
 Baths J H Kellogg, Battle Creek Mich—p 13

American Journal of Physiology, Baltimore

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- Effect of Adding Ixer to Diet on Growth and Reproduction of Rats Alice M Bahrs Portland Ore—p 262
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 Effect of Certain Calcium Salts on Rhythmically Contracting and Quiescent Uterine Fistula with Observations on Action of Posterior Pituitary Extracts S R M Reynolds Cleveland—p 358
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 Effect of Feeding Desiccated Thyroid Gland on Flow of Blood in Femoral Artery of Dog J F Herrick II E Essex F C Mann and E J Brides Rochester Minn—p 434
 Chemical Composition of Saliva and Blood Serum of Children in Relation to Dental Caries Rebecca B Hubbell Ann Arbor, Mich—p 436
 Reaction of Rabbit to Electric Currents Directed Through the Heart G H Ettinger, Toronto and Kingston Ont Canada—p 457
 Study of Vagospasm Action of Vagus on Heart During Acute Anoxemia E J Van Liere and G Crisler Morgantown, W Va—p 469

Am J Roentgenol & Rad Therapy, Springfield, Ill

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 Trauma as an Etiologic Factor in the Production of Diseases of the Chest L R Sante St Louis—p 8
 Trauma as an Etiologic Factor in Malignancy F W Hartman, Detroit—p 16
 Relation of Trauma to Arthritis H P Doub Detroit—p 26
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 Anatomic Basis for Disturbed Function in Evaluation of Permanent Disability H H Kessler Newark N J—p 40
 Traumatic Neurosis L J Foster Detroit—p 44
 Roentgen Ray and the Medical Expert in the Hearing of Compensation Cases S H Rhoads Lansing Mich—p 47
 *Nonopaque Foreign Bodies in the Bronchial Tree Report of Three Cases R C Pendergrass Americus Ga—p 51
 Unusual Roentgenologic Finding in Multiple Myeloma E L Rypins Iowa City—p 56
 Carcinoma of the Lip Report of Results of Treatment at the Collis P Huntington Memorial Hospital from 1918 to 1926 C C Lund and Hilda M Holton, Boston—p 59
 Five Year End Results Obtained by Radiation Treatment of Cancer of the Lip B F Schreiner and W I Mattick Buffalo—p 67
 Treatment and Results in Carcinoma of the Lip Report of One Hundred and Thirty Cases O H Wangersteen and O S Randall Minneapolis—p 75
 Operation for Epithelioma of the Lip J P Webster New York—p 82
 Roentgen Treatment of Bronchogenic Carcinoma E T Leddy and P P Vinson Rochester Minn—p 92
 Diagnostic Value of Chest Roentgenograms Produced with Higher Power Factors E Bridge Rochester N Y—p 95

Nonopaque Foreign Bodies in the Bronchial Tree—

Pendergrass states that among the conditions with which bronchial obstruction due to nonopaque foreign bodies may be clinically confused are acute or unresolved pneumonia, lung abscess, asthmatic obstructive atelectasis, massive tuberculosis, atelectasis due to extrinsic pressure by enlarged tracheobronchial glands or tumors, benign or malignant intrabronchial tumors, congenital bronchial stricture, and laryngeal diphtheria. A roentgen study of suspected cases is always indicated and often proves diagnostic, although bronchoscopic confirmation is needed. No patient should be submitted to bronchoscopy without roentgenologic examination. The roentgenologic examination should consist of roentgenoscopy and of roentgenograms made in inspiration and expiration. Lateral views of the thorax are of value in determining what lobes are involved. Bronchography with iodized oil would demonstrate bronchial obstruction, but its application in children, in whom the majority of the cases of foreign body through aspiration occur is often difficult. It

this procedure is employed in a child in a suspected case of bronchial occlusion by a foreign body, the transcricoid route should be used, as attempts to introduce oil between the vocal cords by means of a catheter might so traumatize the cords as to produce edema, a condition unfavorable to the eventual bronchoscopy that must be done to remove the foreign body. The possible presence of a foreign body in the tracheobronchial tree should always be borne in mind in considering pulmonary disease in children.

American Journal of Tropical Medicine, Baltimore

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- Rocky Mountain Spotted Fever Potentialities of Tick Transmission in Relation to Geographic Occurrence in the United States R R Parker C B Philip and W L Jellison Hamilton Mont—p 341
 *Physiologic Responses to High Environmental Temperature J H Talbott H F Edwards D B Dill and L Drastich Boston—p 381
 Susceptibility of Guinea Pigs to Virus of Yellow Fever M Theiler New York—p 399
 Hereditary Transmission of Infections Through Arthropods E H Hinman New Orleans—p 415
 Relapsing Fever in Texas I Identity of the Spirochete H A Kemp W H Mourund and H E Wright Dallas Texas—p 425
 *Hydrocinchonidine and Hydrocinchonine in Malaria C T Stone Galveston Texas R C Gaskill New York J P Sanders Caspiana La, J C Barton New Orleans V E Schulze Shiner Texas and W T Dawson Galveston Texas—p 437

Physiologic Responses to Temperature—Talbott and his associates present observations which they believe permit the following conclusions as to the mechanism of adaptation to high climatic temperatures. 1 There is a loss of body weight in the first days after going to such an environment. 2 The fluid intake is greatly increased and closely related to the elevation of the temperature. 3 The volume of urine under goes little change, but the specific gravity increases to 1.03 or 1.035. This returns to 1.015 or 1.02 after the period of adaptation. 4 The twenty-four hour excretion of nitrogen in the urine is less than in temperate climates. A lowered protein intake is partially responsible for this effect. 5 The amount of sodium chloride lost in the sweat is greater in the first days after going to a high climatic temperature. This is accompanied by a diminished excretion of chloride in the urine. When adjustment is effective, the salt concentration in the sweat decreases and the amount of chloride in the urine increases. 6 The changes from normal in the constituents of the blood are small, when adaptation has been satisfactory.

Hydrocinchonidine and Hydrocinchonine in Malaria

—In view of the previous use of hydrocinchonine by Giemsa and Werner in doses up to about 0.8 Gm of alkaloid daily, Stone and his associates considered that 0.5 Gm of the alkaloid, which is practically anhydrous, or 0.65 Gm of the sulphate once daily, should not be dangerous. So far as they could find hydrocinchonidine had not been used in therapeutics previously. A dose of 0.5 Gm of hydrocinchonidine alkaloid dissolved in acetic acid, was well tolerated by one of the authors. It was therefore considered that a single daily oral dose of 0.5 Gm should be safe. The drugs were given by mouth, usually in capsules and in most cases a few hours before the ordinary hour of the paroxysm in the particular case. The diagnosis of malaria was confirmed in all cases by examination of the peripheral blood. Of the five patients who were given hydrocinchonidine all received the drug in capsules, about 0.5 Gm once daily for four days. Four had the benign tertian infection and one the estivo autumnal, the symptoms disappeared in all cases and the parasites in three with benign tertian infection. Hydrocinchonine treatment was attempted in eleven cases. Two patients were given six days of treatment for benign tertian relapse; the response was slow but the fever was terminated and blood smears became negative in both cases. Six patients were each given four days only of treatment, one of these vomited shortly after the first dose but completed the course of treatment without further difficulty, four of these patients had benign tertian infection and two estivo autumnal, paroxysms ceased in all cases and the blood smear became negative in four, including one of the estivo autumnal cases. Of the three patients with benign tertian infection who failed to complete four days of treatment, one became nauseated and the other two vomited, but one of the latter also vomited quinine that was given later and in the one who was nauseated a quotidian fever disappeared after the first dose.

Annals of Internal Medicine, Ann Arbor, Mich

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- Presentation of the John Phillips Memorial Prize to Dr William Castle
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Etiology of Pernicious Anemia and Related Macrocytic Anemias W B
Castle Boston—p 2
Studies on Function and Clinical Use of Cortin F A Hartman
Buffalo—p 6
Differentiating Some Functions of Anterior Pituitary Hormones O
Riddle Cold Spring Harbor N Y—p 23
Effect of Hormones on Cellular Permeability E Gellhorn Chicago—
p 33
Undernutrition and Its Treatment by Adequate Diet J M Strang
and F A Evans Pittsburgh—p 45
*Ultra High Frequency Pyretotherapy of Neurosyphilis Preliminary
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*Renal Insufficiency Following Blood Transfusion Recovery After
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The Source of Modern Medicine An Address to the American College
of Physicians A Macphail Montreal Canada—p 120

Ultra-High Frequency Pyretotherapy of Neurosyphilis—Simpson and his associates submitted 100 patients with syphilis, arthritis, gonococcal infections or vascular diseases of the extremities to 5,000 hours of sustained fever therapy without evidence of injury, except for superficial skin burns in some of the patients treated before the development of the air-conditioned cabinet. With due regard to the relatively short time during which their patients have been under observation, the authors state that the results obtained with combined antisyphilitic therapy and radiotherm pyretotherapy in cases of neurosyphilis are at least comparable to the results obtained with the more hazardous regimen of malaria and antisyphilitic therapy. The fact that the most brilliant results are achieved in cases of early neurosyphilis, together with the remarkable observations of Kyrle in the treatment of early syphilis with the more hazardous unreliable and time-consuming regimen of malaria and antisyphilitic therapy make it probable that the logical time to institute combined fever and antisyphilitic therapy is immediately following the establishment of the diagnosis of syphilis.

Renal Insufficiency Following Blood Transfusion—VonDeesten and Cosgrove report a case of renal insufficiency in which recovery followed the transfusion of 750 cc of blood and seemed to depend on venesection. An immediate reaction occurred which was evidenced by a sharp rise in temperature accompanied by hematuria hemoglobinuria and oliguria. A delayed reaction occurred, which reached its peak on the ninth day. This reaction was characterized by severe uremic symptoms headache, rigidity of the neck, convulsions and coma. Repeated blood examinations during this period showed marked retention of urea nitrogen and creatinine. Venesection of 450 cc of blood, followed by the introduction of 500 cc of physiologic solution of sodium chloride intravenously, resulted in an immediate cessation of the uremic symptoms.

Archives of Neurology and Psychiatry, Chicago

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- Vestibulo Ocular Reflex Arc R Lorente de N6 St Louis—p 245
Corticifugal Pathways for Mastication Lapping and Other Motor Functions in the Cat H W Magoun S W Ranson and C Fisher
Chicago—p 292
Colloid Tumors of Third Ventricle H M Zimmerman and W I
German New Haven Conn—p 309
Myelitic and Myelopathic Lesions IV Traumatic Lesions of the Spinal
Cord Clinicopathologic Study C Davison and M Keschner New
York—p 326
Thrombosis of Intracranial Arteries Report of Three Cases Involving
Respectively Anterior Cerebral Basilar and Internal Carotid Arteries
H H Hyland Toronto Ont—p 342
Argyll Robert on Pupils Anatomic Physiologic Explanation of Phenomenon
with Survey of Its Occurrence in Neurosyphilis H H
Merrett and M Moore Boston—p 355

- Epilepsy VIII Aura in Epilepsy Statistical Review of One Thousand
Three Hundred and Fifty Nine Cases W G Lennox and S Cobb
Boston—p 374
Cooperative Research in Schizophrenia R G Hoskins, Boston F H
Sleeper D Shakow, E M Jellinek J M Looney and M H Erick
son Worcester Mass—p 388
Training of the Neurologist J Lhermitte, Paris France translated
by R Kemel Chicago—p 405

Tumors of Third Ventricle—Zimmerman and German present two instances of colloid cyst of the third ventricle, with their detailed clinical histories and anatomic observations, and tabulate twenty-eight similar cases from the literature, with a summary of the clinical features and essential pathologic observations in each. They call attention to certain symptoms of diagnostic aid in the localization of the lesion and lay emphasis on the localizing value of ventriculography, which procedure was eminently successful in both of their personal cases. They conclude that these cysts are usually derived from the choroid plexus of the third ventricle but concede the possibility that in certain instances they may be derived from the ependyma lining this cavity. It also appears possible that rarely such a tumor may be derived from a persistent paraphysis.

Thrombosis of Intracranial Arteries—Hyland gives the histories and pathology observed in three cases of cerebral thrombosis, illustrating the syndromes associated with softening in the distribution of the anterior cerebral, basilar and internal carotid arteries, respectively. One of the patients, a woman aged 61, collapsed while working. She experienced no loss of consciousness but was unable to stand. Three days later, she complained of weakness in the left arm. Fresh hemorrhages were present in the right retina. The left arm and leg lay immobile in extension, the left leg was completely paralyzed, the left arm was partially paralyzed, with apraxia and a grasp reflex present. The right arm and leg were in a constant state of motor activity, the right hand grasping objects without reach but releasing them on command. A few days later she became aphasic, the right arm and leg were totally paralyzed, the left arm, formerly immobile, moved, constantly groping at objects. There was some return of power in the left leg. Both plantar reflexes were in extension. Subsequently the patient became comatose, and all movement in the limbs ceased. Death occurred on the twelfth day after the onset. At post-mortem examination an anomalous distribution of the anterior cerebral arteries was found. They joined to form one long stem which subsequently divided into two on the dorsum of the corpus callosum. A thrombus was present in the common trunk. Another patient, a man, aged 42, previously well except for frequent head colds and postnasal discharge suddenly had a severe headache, followed shortly by a left hemiplegia and transitory diplopia. Examination was negative except for slight residual signs of hemiplegia and right quadrantic homonymous hemianopia. The Wassermann test of the blood was positive and the cerebrospinal fluid showed a positive Kahn reaction but was otherwise not abnormal. There was glycosuria which was of intracranial origin. Two weeks after admission there developed divergent strabismus, dysarthria, nystagmus and weakness of the left leg. These symptoms tended to improve but three days later convergent strabismus, left facial weakness and right hemiparesis developed. The pupils were very small. Death occurred suddenly from respiratory and cardiac failure. Postmortem examination showed thrombosis of the basilar and left vertebral arteries, advanced cerebral arteriosclerosis and acute sphenoidal sinusitis. No evidence of syphilitic disease was found. The other patient a man aged 58 under dietary treatment for a mild diabetic condition, while convalescing from pneumonia suddenly had paralysis of the left arm and leg. Six hours later, he was semicomatose, the right pupil failed to react to light, severe left hemiplegia was present, involving the face arm and leg and sensory impairment was present over the paralyzed area in the face and left arm. Examination on the third day showed blindness in the right eye. Ophthalmoscopic examination indicated that thrombosis of the central artery of the retina was the cause. The left hemiplegia had improved particularly in the leg. During the following week he became increasingly comatose and signs of extensive pulmonary involvement appeared. He died on the tenth day after the onset of the hemiplegia. A postmortem

examination showed that the right internal carotid artery was occluded by a thrombus and, likewise, the right middle cerebral artery as it lay in the sylvian fissure. There was a large area of softening in the distribution of the right middle cerebral artery. The cerebral arteries showed only moderate degenerative changes in their walls.

Arch of Physical Therapy, X-Ray, Radium, Chicago

11 385-448 (July) 1933

- Importance of Ultra High Frequency Therapy F Schliephake Cressen Germany—p 389
Radium Therapy of Cancer M Ienz New York—p 393
Radiation Therapy in Carcinoma of Uterine Cervix A I Tyler Omaha—p 397
Radiotherapy in Uterine Fibroids and in Metrorrhagic Myopathies I Levin New York—p 399
Physical Therapy in Industrial Injuries I H Walke Shreveport La—p 403
Physical Therapeutics in Hemiplegia I M Levy New York—p 407
Toxic Goiter X Rays as a Supplement in Nonoperative Therapy I Bram Philadelphia—p 414

14 449-512 (Aug) 1933

- Study of Fever Producing Agents for Treatment of Cerebral Paresis S D Wilgus and R H Kuhns Ilgen Ill—p 455
Hyperthermia in Dementia Paralytica I (a) Blood Chemistry Studies (Concluded) JI Studies on the Blood Count C T Perkins Worcester Mass—p 461
Basis of Rational Phototherapy F F Woodbury New York—p 469
Colonic Therapy Theory and Practice J W Wiltzie Binghampton N Y—p 479
Physical Measures in Tuberculosis B Mover Saratoga Lake N Y—p 486
Indications and Results of Ionization I Fichtman New York—p 489
Physical Therapy and Internal Secretion J Crober Jena Germany—p 492
Electrosurgery in Otolaryngology Indications and End Results I J Silvers New York—p 494

Toxic Goiter—Bram states that toxic adenoma is a non-neoplastic condition requiring nonsurgical treatment. In its treatment roentgen therapy, in combination with rest, dietary and other medical means relieves the toxicity and prepares the patient for a relatively riskless thyroidectomy. In the management of exophthalmic goiter, roentgen treatment is a valuable supplement to careful medical management and may abbreviate the period of invalidism. Inexpert roentgen therapy may result in a dangerous crisis or in the total elimination of the thyroid function. The prognosis of exophthalmic goiter under proper nonoperative treatment is excellent. Statistics of the author's series of 2,000 patients so treated and followed up for a period of from three to ten years indicate perfect recovery in more than 90 per cent.

Bulletin of Neurol Inst of New York, Baltimore

3 1358 (June) 1933

- Special Disability in Writing S T Orton and Anna Gillingham New York—p 1
*Results of Conservative Compared with Radical Operations in Cerebellar Medulloblastomas Analysis of Twenty Three Cases C A Elsberg and A Gotten New York—p 33
*Abnormal Excretion of Theelin and Prolan in Patients Suffering from Migraine Preliminary Report H A Riley R M Brickner and R Kurzrok New York—p 53
Further Study of Glioblastoma Multiforme E M Deery New York—p 84
Intranuclear Inclusions in Brain Tumors A Wolf and S T Orton New York—p 113
Concerning Clinical Features and Diagnosis of Extramedullary Meningeal and Perineural Fibrosarcomas of the Spinal Cord C A Elsberg New York—p 124
Demonstration of Normal Cerebral Structures by Means of Encephalography II Corpora Quadrigemina L M Davidoff and C G Dyke New York—p 138
Id III Cerebral Convolutions and Sulci L M Davidoff and C G Dyke New York—p 147
Disturbances in Vision and in Visual Fields After Ventriculography C B Masson New York—p 190
*Dangers and Mortality of Ventriculography II W Riggs New York—p 210
Neurologic Manifestations in Two Patients with Spontaneous Hypoglycemia Necropsy Report of Case of Pancreatic Island Adenoma A Wolf C C Hare and H W Riggs New York—p 232
Behavior in Its Relation to Development of the Brain Part II Correlation Between Development of the Brain and Behavior in the Albino Rat from Embryonic States to Maturity F Tilney New York—p 252

Operations in Cerebellar Medulloblastomas—Elsberg and Gotten state that the lower operative mortality rate of their twenty-three patients with cerebellar medulloblastomas in whom a simple suboccipital decompressive operation was

performed and the fact that in these patients the average survival period was about as long as that after more radical tumor extirpations are weighty arguments in favor of conservative surgical intervention. A comparison of the results in their series with those in which primary radical removal of the tumors is usually attempted justifies the conclusion that, at the first operation, the best result will be obtained if the procedure is limited to a liberal suboccipital decompression with the removal of only sufficient tissue for histologic verification, followed by thorough roentgen treatment. There is some evidence to support the belief that, if the primary operation was limited to a decompressive craniotomy and the attempt at radical removal was made at a later time when the patient was no longer acutely ill, after the increase of intracranial pressure had subsided and after the patient had received a series of roentgen treatments, the operative mortality would be reduced. The average survival period of the patients who recovered from one or more operations was 17.3 months. Of the ten patients in whom only conservative operations were performed it was 17.5 months, while in the patients in whom a more radical procedure was done primarily or secondarily after a conservative procedure and who recovered from the operation the average total survival period was 16.5 months. Of the entire series two patients are living one, twenty-one months after a conservative operation, and the other, forty months after a conservative operation followed by a more radical operation. The mortality after conservative operations was 13 per cent.

Excretion of Theelin and Prolan in Migraine—Riley and his associates made daily hormone studies over a prolonged period on the urine of thirteen patients, eleven women and two men suffering from migraine. In each instance the period of observation included a typical attack. In the women, these studies embraced the quantitative estimation of female sex hormone and the identification of prolan. In men, only the prolan identification was included. No distinction was made between prolan A and prolan B. In the women, female sex hormone was usually absent or present in much reduced quantities. A total of twenty-nine headaches occurred in the women during the period of observation. Twenty of the headaches were preceded in their onset by the appearance of prolan in the urine. Of the remainder, the test could not be adequately conducted in seven, in the other two, proper specimens were available but the headache occurred without the antecedent appearance of prolan. In one of the two men a prolan headache relationship was demonstrated, this was not always present in the other. The injection of follutein resulted in the appearance of a characteristic attack of migraine in seven of nine women. The results would indicate that the presence of prolan in the urine is definitely related to the occurrence of the migrainous seizure. Substantiation is given to the hypothesis that ovarian and presumably hypophyseal activities are closely related to the occurrence of migraine. The results of the present studies suggest that this mechanism is one of hypophyseal hyperfunction or of ovarian hypofunction and that prolan itself plays an important part. The occasional demonstration of prolan or the injection of follutein without the subsequent development of symptoms, as well as the interval between the spontaneous first appearance of prolan and the commencement of symptoms, suggests that an additional, unknown factor is involved in the production of the migrainous seizure. The mechanism by which prolan acts is at present unknown. Prolan may appear in the urine of men.

Dangers of Ventriculography—From the study of the literature and from his own experiences, Riggs concludes that fatalities after ventriculography are rarely due to hemorrhage into the ventricles but to the profound effects of the removal of fluid and the introduction of air on the pressure conditions within the cranial cavity. In 148 ventriculographies there were twelve deaths. Most of the fatalities occurred in patients with advanced symptoms and signs of intracranial tumor. Dangerous symptoms often occurred when the growth was subcortical and so situated as to make pressure on the third ventricle and the brain stem. Dangerous symptoms followed by recovery occurred in thirty-one patients, and in twenty-three of these the growths were deeply situated beneath the cortex. Caffeine and hypertonic solution of dextrose given intravenously were

rarely of benefit. The frequency of the occurrence of pressure conditions is not proportionate to the degree of dilatation of the ventricles or the amount of increase of intracranial pressure. Puncture of the ventricle and release of the air will often relieve the symptoms. Ventriculography is a valuable and indispensable diagnostic procedure. It should be used only in those patients in whom localization of the tumor is impossible by clinical means or in whom serious doubt exists regarding the correctness of the clinical localization. Caution is indicated when a supratentorial growth is causing pressure on the third ventricle or the brain stem.

California and Western Medicine, San Francisco

39 73 144 (Aug.) 1933

- Pericious Anemia Its Nature and a Consideration of Recent Advances in the Treatment of the Disease. C C Sturgis and R Isaacs Ann Arbor, Mich.—p 73
Some Observations on Altered Physiology of Hypophysectomized Albino Rats. H A Ball San Diego—p 78
Living Grafts of Endocrine Glands. H B Stone J C Owings and G O Gey Baltimore—p 81
The Knee Joint Its Functional Anatomy and Mechanism of Certain Injuries. J B deC M Saunders San Francisco—p 83
Peptic Ulcer Its Roentgen Diagnosis. M J Geyman and D M Clark Santa Barbara—p 86
Morphology of Erythrocytes in Carcinosis and Other Disorders of the Liver. G Cheney San Francisco—p 90
Functional Disorders of the Colon Spastic Colon Irritable Colon and Mucous Colitis. F H Kruse San Francisco—p 97
Murderers Row Neuropsychiatric Study of Pathologic Behavior of Twenty Five Murderers Who Killed Thirty Three Persons. T J Orison Los Angeles—p 104
Adherent Scars Their Treatment. W S Kishadden Los Angeles—p 109
Infections of Genito Urinary Tract. M B Wesson San Francisco—p 113

Delaware State Medical Journal, Wilmington

5 173 194 (Aug.) 1933

- The Wilmington Death Rate. A C Jost Dover—p 173
Midwifery in Delaware. C A Sargent, Dover—p 176
A World on Wheels. R C Beckett Dover—p 177
Laboratory Comments. R D Herdman Dover—p 179
Control of Venereal Diseases. J B Derrickson Frederica—p 181
Management of One Threatened Epidemic of Diphtheria. E F Smith, Dover—p 184
Tuberculosis in Delaware. G A Beatty Marshallton—p 186

Endocrinology, Los Angeles

17 363-484 (July Aug.) 1933

- Relation of Internal Secretions to Tumor Metabolism. O O Meyer Claire McTiernan and J C Aub Boston—p 363
Bilateral Adrenal Cysts. Case. P Levison, Copenhagen Denmark—p 372
*Water or Fat? Water Retention in So Called Endocrine Obesity. L G Rowntree, Philadelphia and L A Brunsting Rochester Minn—p 377
Is Sporadic Goiter Dependent on Genotypical Factors? E Meulengracht Copenhagen Denmark—p 383
*Gastro Intestinal Disturbances Associated with Endocrinopathies. J Friedenwald and S Morrison Baltimore—p 393
Estrus Reactions in Female Rats United with Castrate Parabionts. R T Hill Madison Wis—p 414
Function of Carotid Gland (Glomus Caroticum). I Action of Extracts of Carotid Gland Tumor in Man. R V Christie Montreal Que—p 421
Id. II Action of Extracts of Carotid Gland of the Elasmobranch. R V Christie Montreal, Que—p 433
Effect of Early Gonadectomy on Gross Body Activity of Rats. C P Richter Baltimore—p 443

Water or Fat—Rowntree and Brunsting describe the cases of two women 20 years of age, who presented endocrine obesity of rapid onset. Menstruation and puberty in both instances started three or four years prematurely, followed by rapid, inexplicable and marked obesity developing between the ages of 18 and 20 and resisting all forms of antiobesity management. On physical examination, both patients were seen to be superlatively feminine in appearance with luxuriant hair and exaggerated feminine configuration. One patient had menstruated at two-week intervals and presented also urticarial lesions and angioneurotic edema. Proceeding on the basis of deranged water metabolism these patients were subjected to dehydration through the use of ammonium salts and the newer mercurial compounds resulting in the reduction of their weight to practically normal. On returning home, the weight was regained in one patient but fully controlled in the other through the use of ammonium and mercurial compounds and water

restriction. It was thought that this syndrome might be explained on the basis of an early excess of prolactin A resulting in early puberty and a subsequent excess of pituitrin resulting in water retention. The syndrome may be regarded as the antithesis of diabetes insipidus.

Gastro-Intestinal Disturbances and the Endocrinopathies—Friedenwald and Morrison point out that the endocrinopathies play an important part in the production of digestive disturbances. The glands chiefly concerned are the thyroid, parathyroids, pituitary and suprarenals. Hyperthyroidism gives rise to diarrhea and increased metabolism and digestive symptoms, which can often be held in check by the use of compound solution of iodine together with proper hygienic measures. When these procedures fail, thyroidectomy is indicated. Hypothyroidism is associated with constipation and decreased metabolism, and these, in addition to other symptoms, can be controlled by the use of thyroid extract or thyroxine. Parathyroid deficiency is closely related to disturbances of calcium excretion, and tetany is observed in gastroduodenal dilatation and upper intestinal obstruction. Calcium salts and parathyroid extract (parathormone) are indicated in these conditions, and salt solution and dextrose when dilatation occurs with alkalosis. Disturbances of the pituitary gland give rise to obesity, enlargement of the abdominal organs and increased thirst associated with diabetes insipidus. Solution of pituitary restores tone and may overcome functional intestinal obstruction, distention of the intestine and constipation. The suprarenals inhibit peristalsis, and the relation of peptic ulcer to suprarenal dysfunction is emphasized. In Addison's disease in which the cortex is involved, marked gastro intestinal symptoms are produced. Epinephrine has been found of value in relieving visceral spasm and cortin in the treatment of Addison's disease. It has been definitely established that a functional relationship exists between various endocrine glands and that a dysfunction in one frequently develops a change in function in another, so that the cause of the production of gastro-intestinal symptoms is at times difficult to discover.

Indiana State Medical Assn Journal, Indianapolis

26 357 404 (Aug 1) 1933

- Spinal Anesthesia Causes of Success and Failure. C S Baker Evansville—p 357
*Diarrhea in Infancy and Childhood. Treatment with the Moro Apple Diet. N C Reglien Michigan City—p 362
Medical Emergencies in Pediatric Practice. M K Miller South Bend—p 365
Indiana Plan. O N Torian Indianapolis—p 369
Extra Uterine Pregnancy. Thirteen Months Duration. J R Crowder and J H Crowder Sullivan—p 371
Etiologic and Pathologic Approach to Diagnosis of Heart Disease. A R Barnes Rochester, Minn—p 373
Functions of the Spleen. F C Mann, Rochester Minn—p 374
Roentgenologic Diagnosis of Carcinoma of the Colon. D R Kirklin Rochester Minn—p 377

Diarrhea in Children—Reglien treated twelve cases of diarrhea with the apple diet. The diarrheas were due to various causes. The ages ranged from 6 months to 9 years. Four cases were of the usual "summer diarrhea" type. In three the diarrhea followed upper respiratory infections, and two were convalescent from measles. One case was that of a baby aged 18 months, with furunculosis, and another, a girl of 4 years, had diarrhea following a dietary indiscretion. The diet given by the author is that of Moro with a modification in the use of drugs. Ripe, freshly grated or scraped raw apples are used. The apples should not be overripe, and none of the seeds, skin or core are used. The apples are prepared only as used. In the treatment of the less severe cases on the first and second days from 100 to 200 Gm of grated raw apple is given from four to five times a day. One day is usually sufficient, although in severe cases it may be necessary to use the apples for two days. As other foods are added, the apples are continued in decreasing amounts. Calcium carbonate, from 5 to 10 grains (0.32 to 0.65 Gm), and phenobarbital, from $\frac{1}{4}$ to $\frac{1}{2}$ gram (0.016 to 0.032 Gm), are given three times a day throughout the first week of treatment. With infants and older children, the calcium carbonate may be mixed with the apples. If necessary, glucose may be added to sweeten the grated apples. On the third day, cottage cheese, dry toast oatmeal gruel with the white of one egg and tea are

added, on the fourth day, two egg yolks and some mashed potatoes, on the fifth day, butter, and on the sixth day, meat. Skimmed milk may be used on the fifth or sixth days in the mild cases.

Journal of Allergy, St. Louis

1 347-454 (July) 1933

- Studies on Pollen and Pollen Extracts. Antigenic Differences Between Short and Grunt Ragweed Pollens. H. W. Cromwell and Marjorie B. Moore. North Chicago, Ill.—p. 147.
- Plan of Standardization of Pollen Extracts Proposed by Cooke and Stull. A. I. Cocer. New York.—p. 354.
- Effect of Consecutive Years of Treatment on Cutaneous Sensitiveness in Late Hay Fever. H. Markow and W. C. Sprun. New York.—p. 363.
- Atopic and Bacterial Asthmatic Patients. Some Immunologic and Histologic Evidence of Fundamental Difference Between Them. M. B. Cohen and J. A. Rudolph. Cleveland.—p. 367.
- Sedimentation of Red Blood Cells in Allergic Diseases. Report of Study in Seventy-Five Cases. I. H. Westcott and W. C. Sprun. New York.—p. 370.
- Blood Sedimentation Rate in Allergic Disease. Study of One Hundred and Fifty Nonselected Allergic Patients. A. Uffe. Philadelphia.—p. 379.
- So Called Urinary Proteose in Individuals Allergic to Ragweed. W. T. Vaughan. Richmond, Va.—p. 385.
- Anaphylactic Manifestations in Cancer. M. Cutler and W. Saphir. Chicago.—p. 389.
- Milk Free Cereal Free and Egg Free Diet for Allergic Infants. M. B. Cohen, Bessie Wallace, Helen Mallory, and J. A. Rudolph. Cleveland.—p. 395.
- Incidence of Asthma in Four Hundred Cases of Chronic Sinusitis. S. S. Bullen. Rochester, N. Y.—p. 402.
- Vasomotor Rhinitis Treated with Pure Carbohydric Acid. Preliminary Report. C. A. Sprucke. New York.—p. 408.
- Vaccine Therapy. Uses and Misuses. Statistical Bacteriologic Study. H. B. Wilmer and H. M. Cobe. Philadelphia.—p. 414.
- Aspirin Allergy. Method of Testing for Aspirin Sensitiveness and Method of Avoiding Aspirin Catastrophes. W. W. Duke. Kansas City, Mo.—p. 426.

Vasomotor Rhinitis.—Sprucke applied pure phenol to the nasal mucous membrane in sixteen patients with vasomotor rhinitis, some of them complicated with asthma, hay fever and chronic sinusitis, who had obtained little or no relief from various other treatments. Phenol, when applied to the mucous membrane of the nose, blocks the nerve endings in the mucosa but does not induce desensitization. The application is accompanied by little or no pain. The after effects, which on the average last about two days, are headache, nasal obstruction, a grippy feeling and pain in the nose. Two patients had occasional nose bleeds. Phenol leaves no scars nor is there any impairment to the sense of smell. Of the sixteen patients with vasomotor rhinitis so treated ten had complete and almost immediate relief and three were moderately relieved. Of the four patients whose cases were complicated by pollen asthma, three were relieved of their asthmatic symptoms. The two patients with asthmatic bronchitis and three with vasomotor rhinitis were not relieved. The application of pure phenol to the nares relieves rhinorrhea, sneezing and nasal obstruction in vasomotor rhinitis. The permanence of this relief is as yet uncertain. All the patients are still under observation.

Journal of Experimental Medicine, New York

58 137-252 (Aug. 1) 1933

- Quantitative Studies on Precipitin Reaction. Antibody Production in Rabbits Injected with an Azo Protein. M. Heidelberger, I. I. Kendall, and C. M. Soo Hoo. New York.—p. 137.
- Effect of Pneumococcus Autolysates on Pneumococcus Dermal Infection in Rabbit. K. Goodner. New York.—p. 153.
- Studies on Certain Spreading Factor Existing in Bacteria and Its Significance for Bacterial Invasiveness. I. Duran Reyna. New York.—p. 161.
- Evaluation of Active Resistance to Pneumococcus Infection in Rabbits. K. Goodner and E. G. Stillman. New York.—p. 183.
- Resistance to Pneumococcus Infection in Rabbits Following Immunizing Injections of Heat Killed Pneumococcus Suspensions. E. G. Stillman and K. Goodner. New York.—p. 195.
- * Titration of Yellow Fever Virus in Stegomyia Mosquitoes. N. C. Davis, M. Frohlicher, Jr., and W. Lloyd Bahia. Brazil.—p. 211.
- Vaccination with Heat Killed and Formalinized Tubercle Bacilli in Experimental Tuberculosis. R. M. Thomas. New York.—p. 227.
- Study of Therapeutic Mechanism of Antipneumococcal Serum on Experimental Dermal Pneumococcus Infection in Rabbits. III. Influence of Nonspecific Factors. A. J. Gelmar and A. B. Sabin. New York.—p. 237.
- * Changes in Titer of Antipneumococcal Humoral Immunity in Adult Human Beings. J. B. Graesser and M. C. Harrison. Chicago.—p. 245.

Titration of Yellow Fever Virus.—Davis and his associates made titrations of yellow fever virus in stegomyia mosquitoes, using rhesus monkeys as test animals. They found

that 1 The average mosquito immediately after engorging on highly infectious blood contained between 1 and 2 million lethal doses of virus. The titer of freshly ingested blood was as high as 1 billion lethal doses of virus per cubic centimeter. 2 During the fortnight succeeding a meal on infectious blood there occurred a reduction of titratable virus to not more than 1 per cent of that present in the freshly fed insects. 3 The titer was somewhat higher at later periods. This rise in titer signified possibly not a multiplication but merely an increase of extracellular virus and of that easily freed by grinding to a titratable form. 4 At no later stage did the quantity of titratable virus equal that demonstrated in freshly fed insects.

Antipneumococcal Humoral Immunity.—Graesser and Harrison tested fifty-five persons to determine the pneumococcal promoting activity of their serum against pneumococci types I and II. By repeated tests an attempt was made to study the constancy of the degree of their immunity over intervals of from two to six months. In this group were included nine persons with common colds and twelve cases of a severe influenza-like infection. Fifteen of the fifty-five persons showed a change in the titer of their humoral immunity against either type I or II or both. Three of these showed an increase, and two a decrease. This reaction in most instances was a specific one in that the altered reaction toward one type was not associated with a similar change toward the other type of pneumococcus. Colds and influenza-like infections apparently exerted no effect on the titer of humoral immune substances.

Journal of General Physiology, Baltimore

16 929-998 (July 20) 1933 Partial Index

- Quantitative Aspects of Cutaneous Sensory Adaptation. I. H. Hoag and Worcester. Mass.—p. 911.
- Modification of Antibodies by Formaldehyde. S. Mudd and Eleanor W. Joffe. Philadelphia.—p. 947.
- Swelling of Erythrocytes in Solutions of Ammonium Salts. E. Schlodt. Copenhagen. Denmark.—p. 977.

Journal of Industrial Hygiene, Baltimore

15 165-256 (July) 1933

- Pulmonary Asbestosis. Its Clinical, Radiologic and Pathologic Features and Associated Risk of Tuberculous Infection. P. Ellman. London. England.—p. 165.
- Sand and Metallic Abrasive Blasting as an Industrial Health Hazard. J. J. Bloomfield and I. Greenburg. Washington, D. C.—p. 184.
- Chemical Hematuria from Handling 5-Chloro Ortho Toluene. A. N. Currie. London. England.—p. 203.
- Outbreak of Dermatitis in Cotton Mills Due to Varnish. L. Schwartz. Washington, D. C. and C. I. Pool. Providence, R. I.—p. 214.
- Relation of Carcinogenicity of Mineral Oils to Certain Physical and Chemical Characteristics of These Oils. R. I. With. Manchester. England.—p. 226.
- Carbon Monoxide Poisoning from an Oil Stove. Case. L. F. Barker. Baltimore.—p. 238.
- Diurnal Variations of Skin Temperature. F. Heiser and J. H. Cohen. New Haven. Conn.—p. 243.

Journal of Lab. and Clinical Medicine, St. Louis

18 1089-1202 (Aug.) 1933

- Colloidal Changes Produced by Several Antipyretics and Analgesics and Their Alleged Connection with Excitability of Nervous Centers. O. Turth and R. Scholl. Vienna. Austria.—p. 1089.
- Comparison of Sugar Tolerance Curves Obtained on Venous and Capillary Blood. J. W. Cavett and S. R. Seljeskog. Minneapolis.—p. 1103.
- * Concerning Mechanism of Focal Infection. L. S. Kru. Philadelphia.—p. 1108.
- Diabetic Coma Occurring Nineteen Times in the Life of a Patient with Diabetes Mellitus. Case Report with Autopsy Findings. Elaine I. Ralli and Alice M. Waterhouse. New York.—p. 1119.
- Blood Regeneration in Dogs as Influenced by Liver and Iron Preparations. A. E. Meyer. Rockford, Ill.—p. 1127.
- * Bismuth in Treatment of Syphilis. H. Beckman. Milwaukee.—p. 1136.
- Effect of Nutritional Status on Phosphorus Content of Protein of Tissue. O. H. Fulcher. Rochester. Minn.—p. 1144.
- * Investigations Concerning Effect of Blood Transfusion on the Heart. I. Electrocardiographic Studies. S. H. Polaves, C. Shookhoff and D. Kornblum. Brooklyn.—p. 1148.
- Large Q Wave in Lead III of Electrocardiogram. Comparison of White and Negro Races. R. Ashman, B. J. DeLaurel, E. Hull, and Dorothy Drawe. New Orleans.—p. 1153.
- Comparative Value of Intradermal and Ophthalmic Tests for Sensitivity to Horse Serum. I. Tuft. Philadelphia.—p. 1160.

Mechanism of Focal Infection.—Kau recovered streptococci and staphylococci from presumably primary foci in twenty-one cases of chronic focal infections. Sterile filtrates of broth cultures and young whole cultures were injected intravenously into rabbits. The lesions produced by the two were frequently similar in degree and distribution. Synovial and pericardial

changes were most frequently produced. There was no evidence of elective or selective localization on the part of either filtrates or whole organisms in the rabbits of either series. It would appear that toxins produced in the primary foci of focal infection may be absorbed and produce the secondary lesions. The author suggests that the early secondary lesions of focal infection may be due to these toxins and that the drainage or extirpation of primary foci may afford prompt therapeutic results. In long established chronic secondary infections however, the organisms themselves may be productive of the lesions and therefore probably independent of the primary foci and account for the absence of therapeutic improvement following their drainage or extirpation.

Bismuth in Treatment of Syphilis—Beckman states that the water soluble bismuth salts are rapidly and fairly regularly absorbed but usually cause pain on injection. The oily suspensions are more slowly absorbed than the aqueous solutions and may cause embolism or infarction or be followed by troublesome abscesses but they need be injected only once a week and the injections are not usually painful. Only the use of individual ampule preparations insures reliable dosage. The absorption of the liposoluble preparations begins almost as quickly as that of the aqueous solutions but proceeds more nearly at the slower rate of the oily suspensions. The injections are relatively painless and rarely leave sequelae, they must, however, be made as frequently as when using aqueous solutions. In early syphilis bismuth can apparently satisfactorily replace mercury but should not be employed exclusively until statistical studies have proved its superiority beyond doubt. In late syphilis, there seems to be no doubt that bismuth, properly used with mercury and the iodides often makes the use of the arsphenamines unnecessary, a negative Wassermann reaction is sometimes accomplished in stubborn latent cases. In neurosyphilis, bismuth has proved its right to be added to the list of effective agents but not to usurp the place of any of the others. In congenital syphilis, when used alone bismuth is of greater value than mercury alone but probably less valuable than the arsphenamines. It sometimes gives a negative Wassermann reaction when the other two drugs have failed. In syphilis intolerant to arsenic, bismuth is of value as an alternate drug with mercury. The toxicity of bismuth is much lower than that of either the arsphenamines or mercury.

Effect of Blood Transfusion on the Heart—Polaves and his associates observed that it is not always safe to perform a blood transfusion on a person known to be suffering from cardiac or cardiovascular disease. In the performance of about 3,500 transfusions one of the authors noticed a number of reactions which seemed to be due to cardiac embarrassment all other known causes having been excluded. In no instance could the reaction be ascribed to incompatible blood or other demonstrable cause. Since there was evidence of existing cardiac pathologic changes various experiments were undertaken to study the effects of transfusion, in order to determine if possible the part played by the heart in these reactions. Electrocardiographic observations made before during and after blood transfusions of patients with normal and diseased hearts throw little light on the changes in the heart during blood transfusion even though there is definite clinical as well as electrocardiographic evidence of existing heart disease. In one case there were definite anginal symptoms during the transfusion with no changes in the electrocardiographic tracing. Other means than the electrocardiograph must be sought as an aid to determine the effects of transfusion on a diseased cardiovascular system.

Journal of Nervous and Mental Disease, New York

NS 113 220 (Aug.) 1933

- Payne Whitney Psychiatric Clinic of New York Hospital W. L. Russell New York—p. 113
 Relation Between Nutrition, Mental Level and Adjustment in Delinquent Boys M. Molitch and A. K. Eccles, Jameburg, N. Y.—p. 123
 Study of Neuropsychic Rudimentary Functions in Man and Schizophrenia Eleven Theorems for a Dialectic Natural Historical Theory of Schizophrenia J. S. Calant, Leningrad, Russia—p. 128
 Primary Familial Degeneration of Cerebellum Report of Two Cases (Clinical) T. T. Stone, Chicago—p. 131
 Vestibular Apparatus in Neurosis and Psychosis P. Schilder, New York—p. 137

Kentucky Medical Journal, Bowling Green

KJ 351 394 (Aug.) 1933

- Relation of Nasal Sinuses to Asthma W. A. Weldon, Glasgow—p. 360
 Management of Skull Fractures Involving Frontal Sinus E. C. Yates, Lexington—p. 362
 Surgical Treatment of Concomitant Squint A. O. Pfingst, Louisville—p. 367
 Three Types of Deafness W. Dean, Louisville—p. 372
 Detachment of Retina H. D. Abell, Paducah—p. 377
 Movie Film Illustrating Trachoma and Trachoma Work in White People of United States R. Sory, Richmond—p. 378
 Acute Laryngotracheobronchitis in Children Case Reports S. B. Marks, Lexington—p. 381
 My Observation of Lynch Ethmofrontal Operation A. L. Bass, Louisville—p. 383

Laryngoscope, St. Louis

LJ 607 692 (Aug.) 1933

- Phonasthenia and Its Treatment by Electropneumotherapy B. L. Bryant, Cincinnati—p. 607
 Plastic Reconstruction of External Auditory Meatus F. E. Palmer and J. S. Reifsnider, Sterling, Colo.—p. 618
 Discussion of Some of the Recent Developments in Regard to Otorrhea, Cholesteatoma and the Static Labyrinth G. M. Coates, Philadelphia—p. 622
 *Intracarotid Treatment of Meningitis and Changes Noted in Carotids Following Intracarotid Therapy Measures to Prevent These Changes M. S. Ersner and D. Myers, Philadelphia—p. 630
 Bacteremia of Otic Origin Routes of Infection to Blood Stream Case Report with Recovery S. D. Greenfield, Brooklyn—p. 646
 Vastoiditis Associated with Hematuria Case A. H. Persky, Philadelphia—p. 652
 Rhinolithiasis Report of Three Cases J. M. Polisar, Brooklyn—p. 658
 Thrombosis of Lateral Sinus Inferior Petrosal Sinus and Opposite Lateral Sinus with Postmortem Specimen Case Report J. M. Brown and R. J. Bowman, Los Angeles—p. 664
 Sinusitis in Children From the Rhinologic Point of View H. B. Cohen, Philadelphia—p. 670
 Frontal Osteoma Molding Misplaced Frontal Septum Case Report Z. W. Colson, Lawrence, Mass.—p. 677
 Argynia in Child Following Intranasal Use of Argynol M. A. Zacks, Philadelphia—p. 680
 The Laboratory in Laryngology H. Friend, New York—p. 687

Intracarotid Treatment of Meningitis—Ersner and Myers believe that their technic will minimize the extravascular and intravascular changes, especially thrombosis of the vessel, atheromatous changes and aneurysm. The neck is extended and the face is turned to the opposite side. The position of the common carotid artery is indicated by a line drawn from the upper part of the sternal end of the clavicle to a point midway between the tip of the mastoid process and the angle of the mandible. An incision is made beginning at the thyroid cartilage, along this line and extending downward about 8 cm. The skin, superficial fascia and platysma are incised and retracted and the ribbon muscles are retracted. The face is turned upward. The anterior border of the sternocleidomastoid muscle is then retracted laterally. If the muscle is not retracted it is often difficult to locate the artery that lies under the muscle. The artery is located by palpation, the sheath is isolated and incised and the carotid artery lying medially, the internal jugular vein laterally and the vagus nerve posteriorly and between are exposed. An aneurysm hook is then passed beneath the common carotid artery. Two pieces of umbilical tape are soaked in sterile liquid petrolatum, threaded on the aneurysm needle and passed beneath the vessel above and below the point of injection. These are used as traction sutures and remain in place. The portion of the artery to be injected is then drawn into view by making traction on these sutures and a 23 gage 1½ inch hypodermic needle attached to a 10 or 15 cc Luer syringe is inserted into the vessel and blood is drawn into the syringe. The injection is given slowly. The wound is flooded with sterile liquid petrolatum. A small piece of petrolatum gauze dressing is placed into the wound the two pieces of umbilical tape are tied loosely over the gauze and another gauze dressing and bandage are placed over all. When it is desired to repeat the injection the new adhesions are carefully broken up with a gloved finger the vessel is brought into view by traction on the tapes and the injection is repeated. By using this procedure the authors have been able to administer serum dextrose, Precip's solution of iodine and acriflavine base without injury to the vessel. They are of the opinion that the intima suffered less injury than any other portion of the artery. The media showed areas of necrosis, lamination and infiltration with various

cells. The adventitia seemed to bear the brunt of pathologic changes, showing necrosis, infiltration and almost approaching abscess formation. Both carotid vessels should be utilized in order to bring the medicaments in contact with the two sides of the brain. The arteries can stand a reasonable amount of trauma provided care and caution is exercised. There is no doubt that a certain amount of damage is done to the carotids following intracarotid therapy; however, this should not deter any one from employing this method in the treatment of meningitis.

Maine Medical Journal, Portland

21 143 160 (Aug.) 1933

- Precordial Pain T P Bill Bingham—p 148
Lead Poisoning with Particular Reference to Use of Milk Therapy
M H Shorago, Portland—p 157

Michigan State M Society Journal, Grand Rapids

22 419 478 (Aug.) 1933

- 'Industrial Backs' F C Kidner Detroit—p 419
Curriculum of My Hopes H J Vanden Berg Grand Rapids—p 428
Neglected Drugs D W Fenton, Reading—p 432
The Asthmatic Child S J Levin Detroit—p 436
Nonspecific Urethritis in the Female Its Complications and Sequelae
R M Nesbit Ann Arbor—p 440
The Female Urethra R J Hubbell Kalamazoo—p 442
Massive Intra Abdominal Hemorrhage from Ruptured Graafian Follicle
Cysts H W Hewitt and J G Slevin Detroit—p 445

Minnesota Medicine, St Paul

16 505 554 (Aug.) 1933

- Historical Aspects of the Minnesota State Medical Association N O Pearce Minneapolis—p 505
Treatment of Tuberculosis by Hyperpyrexia Part II Comparison of Types of Tuberculosis in Domesticated Animals and Their Normal Body Temperature G F Duncan F S Mariette and L P K Fenger Oak Terrace—p 510
Simplified Oleothorax A Josewich Minneapolis—p 512
Coexistent Chronic Infectious (Atrophic) Arthritis and Cholecystitis Results of Cholecystectomy E S Judd and P S Hench Rochester—p 522
Mesenteric Cyst Report of Case T Cratzek, St Paul—p 532

Simplified Oleothorax—Josewich uses oil of cajuput, U S P X, rectified, which is water-white. It is well to incorporate, as necessary in proper amount various dyes or antiseptics such as acriflavine, carmine, methylene blue, metaphen, acriflavine hydrochloride, iodized oil, or others, to assist in the early detection of pleuropulmonary perforations or to add antiseptic properties to the solution. The author has found it convenient to prepare suitable quantities of colloidal solution, preferably employing a colloid mill. The solutions are put in ampules of various sizes. These are easily cleansed and warmed before using. He considers it advisable to inject from 1 to 4 cc of from 1 to 5 per cent of the essential oil in liquid petrolatum as the initial dose. The colloid solution requires little pressure on the plunger and permits the use of needles of the smallest caliber. Subsequent quantities are injected in arithmetical progression at intervals of one week or longer. If pus is present, moderate amounts should be removed at each treatment. The most reliable means of checking the status of the oleothorax is the fluoroscopic control before and after injection of oil, as well as in the interim.

Missouri State Medical Assn Journal, St Louis

30 309 350 (Aug.) 1933

- Silicosis and Silicotuberculosis I C Boslworth St Louis—p 309
Osteochondromatosis Report of Case W Smith Springfield—p 316
Early Cardiac Strain O H Brown Phoenix Ariz—p 318
Suspension Traction Frame for Injuries to Forearm and Lower Arm
C P Heller Kansas City—p 323
Idealism in Medicine and Surgery F W Bailey St Louis—p 325
Whither Are We Drifting C P Hungate Kansas City—p 329

Osteochondromatosis—Smith points out that, in osteochondromatosis, the knee is the joint most commonly involved and the condition is usually monarticular. It is a disease of adult life, and the majority of opinion is that it is of neoplastic origin. The joint may show no gross lesions other than the presence of loose bodies free within its cavity, or the joint may be characterized by a synovial membrane showing proliferations. These are hypertrophied villi containing cartilaginous and osteocartilaginous bodies. The two conditions may be found associated, the joint showing proliferations of its synovial membrane, together with free bodies within the joint cavity.

The loose bodies have their origin within the villi. Some are of fibrocartilage, some of fibrocartilage with bone in the interior, and some are of pure bone. The patient suffers from attacks of locking of the joint with severe pain due to the bodies becoming caught between the articular surfaces. Crepitation with movement of the joint may be noticed. The motion of the joint is restricted if the involvement is extensive. Palpation may or may not reveal the presence of the loose bodies. The treatment consists of the removal of the loose bodies by open operation. If there is extensive involvement of the synovial membrane, it is necessary to remove this as well. The author reports such a case in which numerous loose and pedunculated bodies of varying size were removed. Healing was by primary intention. Passive motion was begun on the third day. The patient was discharged from the hospital on the eleventh day and active motion and use of the leg was allowed after the third week.

New Jersey Medical Society Journal, Orange

30 471 516 (July) 1933

- Presidential Address A H Ippincott Camden—p 471
Irritable Bladder of Women M F Campbell Montclair—p 476
Transplantation of Ureters in Extensive Vesicovaginal Fistula with Destruction of Urethra and Vesical Sphincter E J Halligan Tennek and H J Halligan Jersey City—p 482
Dementia Paralytica Diagnostic Errors and Their Prevention K Rothschild New Brunswick—p 486
Mass Action and Virulence in Bacteria C M B Gilman Arlington—p 489
Biliary Tract Infection F G Reed Morristown—p 491
Orthopedic Treatment of Infantile Paralysis A J Davidson Philadelphia—p 493
Asthrenopia in Children S C Rhoads Westville—p 495
Medical Aspects of Carcinoma of the Colon W J Mallory Washington D C—p 496

Psychiatric Quarterly, Albany, N Y

7 357 542 (July) 1933

- Mental Hygiene Versus Psychoanalysis M Harrington Napanoch N Y—p 357
Classification of Prisoners J L McCartney Elmira N Y—p 369
Place of Occupational Therapy in Management of Functional Psychoses T D Noble Towson Md—p 378
Regression in Manic Depressive Reactions A E Witzel Brooklyn—p 386
Precipitating Factors in Manic Depressive Psychosis Mary F Brew Syracuse N Y—p 401
Id J H Travis Brooklyn—p 411
Prognosis in Manic Depressive Psychoses Report of Factors Studied in Four Hundred and Ninety Three Patients R R Steen Kings Park N Y—p 419
Order of Birth in Manic Depressive Reactions H H Berman Ogdensburg N Y—p 430
Manic Depressive 'Exhaustion' Deaths Analysis of Exhaustion Case Histories I M Derby Brooklyn—p 436
Hereditary and Environmental Factors in Causation of Dementia Praecox and Manic Depressive Psychoses H M Pollock B Maltberg and R C Fuller New York—p 450

Public Health Reports, Washington, D C

48 907 954 (Aug 4) 1933

- Injection of Mosquito Sporozoites in Malarial Therapy B Mayne—p 909
Seasonal Acute Conjunctivitis Occurring in the Southern States Ida A Bengtson—p 917
Physical Impairment and Weight Study of Medical Examination Records of Three Thousand and Thirty Seven Men Markedly Under or Over Weight for Height and Age R H Britten—p 926

48 993 1030 (Aug 18) 1933

- Variations of Growth in Weight of Elementary School Children 1921 1928 C E Palmer—p 993
Additional Studies on Relationship of Viruses of Rocky Mountain Spotted Fever and Sao Paulo Exanthematic Typhus G E Davis and R R Parker—p 1006
Estimation of Basophilic Cells (Reticulocytes) in Blood by Examination of Ordinary Blood Film R R Jones—p 1011

Injection of Sporozoites in Malarial Therapy—Mayne states that malaria sporozoites isolated in suspended mediums from salivary glands of mosquitoes kept for periods of from one hour to five days and one hour reproduced malarial fevers when injected intravenously into patients for the purpose of malarial therapy. The reactions and subsequent clinical histories appeared to be no different from those occurring in cases treated with bites of infected anopheline mosquitoes. The three species of Plasmodium—tertian, estivo-autumnal and quartan—were thus successfully reproduced. The medium used in these instances consisted of sodium citrate alone or mixed with

freshly drawn, defibrinated human blood, enriched with a 1 per cent solution of dextrose. In these tests all attempts at mixing the sporozoites with glycerin and sodium chloride treated in identical manner were unsuccessful. Sporozoites kept in suspended cultures at temperatures below 42 F did not prove viable on human transplantation. In developing malarial therapy, practical difficulties were encountered when mosquitoes were applied by biting. After a preliminary test of a suitable medium for the maintenance in vitro of dissected-out sporozoites, an attempt was made to determine the length of time sporozoites from the salivary glands of insects may remain viable. More than fifty experiments were made. Malaria was produced in sixteen patients injected with the contents of the salivary glands of from one to three mosquitoes. In two instances successful injections resulted from the use of the sporozoites (of one mosquito) held in vitro at intervals of from one to three days. In all the tests the suspended mediums were maintained uniformly at a temperature of from 48 to 52 F. The clinical incubation periods developing from the inoculations, whether intravenous or intramuscular (subscapular), were from twelve to sixteen days in the estivo-autumnal strain, from thirteen to twenty-two days in the tertian and thirty-two days in the quartan. The parasite incubation was found to be from thirteen to fifteen days in the estivo-autumnal, from thirteen to twenty-two days in the tertian and thirty-three days in the quartan type.

Radiology, St Paul

21 1 104 (July) 1933

- Roentgen Ray Diagnosis of Inflammatory Disease of Appendix J C Bell Louisville Ky—p 1
Influence of Filtration on Surface and Depth Intensities of 200 Kilo volt X Rays Edith H Quimby and L D Marinelli New York—p 21
*Standardization of Roentgen Dosage by Means of Methylene Blue W Stenstrom and Anne Lohmann Minneapolis—p 29
Value of Functional Gallbladder (Iodikon) Test as Checked by Operative Findings in Seventy Cases L J Carter, Brandon, Manit Canada—p 37
Effect of Irradiation on Ovary of Striped Gopher (Spermophilus Citellus Tridecemlineatus) Frances A Ford Rochester Minn—p 42
Advantages of X Ray Examination of Chest in Lateral Recumbency E Korol and H A Scott Lincoln Neb—p 46
Gastric Motility as Influenced by Paralysis of Diaphragm A J Hrubal and M Joannides Chicago—p 49
Selection and Care of Therapy Tubes D M Clark Santa Barbara Calif—p 55
Brain Abscess Resulting from Aural and Sinus Infections C C Coleman Richmond, Va—p 59
The Cancer Patient and His Disease M J Sittenfeld New York—p 63
Clinical and Roentgenologic Study of Factors Influencing the Palpability of the Liver C W Osgood and J E Habbe Milwaukee—p 66
*Observation in Preliminary Study of Tumor Histology and Bone Metastases E E Downs and W S Hastings, Philadelphia—p 76
Bronchography an Aid to the Roentgenologist L G Allen, Kansas City, Kan—p 79

Standardization of Roentgen Dosage—Stenstrom and Lohmann state that, in order that a chemical method for measurements and standardizations of roentgen dosage may become practical, these requirements must be fulfilled: 1 Absorption and scattering of roentgen rays in the medium must approximate that of the tissue. 2 The chemical change to be measured must have a simple relation to the dose. 3 The medium must be stable enough so that it may be kept for a few days before measurements are made. 4 The method for determining the amount of change must be relatively simple and should permit determination of the dosage to an accuracy of at least 5 per cent. 5 The medium should be easy to obtain and reproduce. 6 The change needed for measurements must be produced by a reasonable dose. 7 A fairly small amount of solution should be sufficient for each exposure. The authors believe these requirements can be fulfilled by a properly prepared solution of methylene blue. Methylene blue was chosen because it was influenced considerably by irradiation and owing to the fact that the color change could be measured simply and quickly by means of a spectrophotometer. About 0.0016 mg of methylene blue per cubic centimeter of water was found to be a suitable concentration. A spectrophotometer was used to determine the absorption curve. After it had been found that the maximal absorption was in the red region at a wavelength of about 6700 angstrom units, it was considered necessary to measure the absorption at this wavelength only and to use this absorp-

tion as a measure of the concentration and of the change due to roentgen irradiation. With an absorption tube 10 cm long the extinction coefficient before irradiation was found to be 0.316. Since the color of methylene blue is to some extent affected by exposure to light, it is necessary to keep the solution in light-resistant containers until the time comes to make the measurements. If care is taken, the solution will keep for at least several weeks. For the experiments about 30 cc of solution was sealed in a glass container and placed inside the X-ray tube drum at a distance of 65 cm from the target. No filter was used. The voltage and the current were usually kept at 200 kilovolts and 30 milliamperes, respectively.

Tumor Histology and Bone Metastases—The study of twenty unselected cases of tumor suggests to Downs and Hastings a theory to the effect that if the primary tumor has the property of exciting a marked desmoplastic reaction in its growth, this property will manifest itself when bone metastases appear and will stimulate a sclerosing type of lesion, also that the anaplastic, highly cellular tumors produce osteolytic changes in their bone metastases. There are various gradations of desmoplasia and anaplasia, and the large percentage of primary neoplasms are both anaplastic and desmoplastic. Accordingly, in the majority of cases both destructive and sclerosing lesions are prominent. It would seem rational to believe that, if the primary tumor cells have the power to excite the growth of fibroblasts and young connective tissue, these cells, when lodged in the bones, would likewise stimulate the formation of osteoblasts which are closely akin to the fibroblasts. The authors do not agree with Kaufmann and others that epithelial cells can possibly become osteoblasts. There are certainly numerous other factors concerned in the development of osteolytic and osteogenic metastatic lesions. The age of the patient, pre-existing constitutional diseases and endocrine disturbances undoubtedly have their influences. Along this line the authors propose to make a study of the calcium metabolism in these cases, in an attempt to determine what part, if any, is played by the parathyroids.

South Carolina Medical Assn Journal, Greenville

29 157 180 (July) 1933

- Treatment of Gonorrhea in the Male from the Standpoint of the General Practitioner J D Whaley Charleston—p 159
Strabismus A Plea I J Mikell Columbia—p 162

Wisconsin Medical Journal, Madison

32 505 564 (Aug) 1933

- Constitutional Factors in Disease J Bauer Vienna Austria—p 513
Some Lessons Learned from Our Mistakes J C Doolittle, Lancaster—p 515
*Use of Cortin in Case of Acute Hypoadrenia Occurring as a Sequel of Acute Streptococcic Sore Throat J H Robbins Madison—p 519
Splenectomies Report of Four Cases C E Ryan, Appleton—p 523
Psittacosis in Madison N Thomas and A Stehr, Madison—p 525
Acute Appendicitis C E Constantine Racine—p 527
Method to Counteract the Narcotic and Intoxicating Effect of the Barbituric Acid Drugs H H Reese Madison—p 530
Spontaneous Pneumothorax in the Apparently Well H P Benn, Stevens Point—p 532

Use of Cortin in Acute Hypoadrenism—Robbins reports a case of acute hypoadrenism as a complication of acute streptococcic sore throat. The results of treatment, with cortical extract, of the case reported and of cases of typical Addison's disease, differed in only two respects: the blood pressure returned to normal limits and has been maintained there and the patient required no treatment for over three months and has steadily improved. For these reasons and because the complications of the kidney cleared up so promptly, the author feels that the damage to the suprarenals was toxic and temporary and that no permanent pathologic change has resulted. However, he believes that the cortin was essential to maintain life during the temporary abatement of the function of the suprarenals. Patients suffering from chronic hypoadrenism complain of lowered blood pressure, from 90 to 110 systolic, lack of energy and ambition, rapid fatigue on exertion, vague gastro-intestinal symptoms with no pathologic background, mental depression, and so on. The usual diagnosis in these cases is neurocirculatory asthenia. The author has been treating these patients with whole suprarenal substance with encouraging results.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

10 143 186 (July) 1933

Unusual Complications of Surgical Anesthesia Under Ether W. A. Kemp—p. 145

Kidney Disease and Anesthetics R. J. Minnitt—p. 160

*Bronchoscopy in Diagnosis and Treatment of Postoperative Lung Complications V. E. Negus—p. 165

Postoperative Lung Complications—Negus discusses the conditions that directly concern the anesthetist and the bronchoscopist. They are inspiration of the foreign body, diffuse suppurative bronchitis, abscess of the lung and bronchiectatic abscess, acute massive collapse or atelectasis and multiple bronchiectasis. He concludes that postoperative complications of the lung calling for bronchoscopy are not frequent, because suitable precautions are taken by most anesthetists and surgeons. However, a certain number of cases occur that are sometimes diagnosed as pneumonia but are actually due to the mechanical obstruction of a bronchus. Suspected cases require bronchoscopy for diagnosis and respond well to treatment by aspiration and direct medication. All cases due to a foreign body can be cured, and most operative abscesses of the lung clear up quickly. Diffuse bronchitis is improved and its cessation prevents the subsequent development of multiple bronchiectasis. Acute massive collapse is in many instances the result of occlusion of a bronchus by a plug of thick mucus, the removal of which effects a cure.

British Medical Journal, London

2 137 180 (July 22) 1933

Treatment of Rodent Ulcers N. S. Finzi—p. 137

Decline in Death Rate of Diphtheria Compared with That of Scarlet Fever L. Collett—p. 139

Intestino-vesical Fistula R. J. Wilkin—p. 140

*X-ray Treatment of Malignant Disease of the Lung F. Roberts—p. 142

Fractures of Both Bones of the Leg F. A. Wardle—p. 146

*Treatment of Cystic Hygroma of the Neck by Sodium Morrhuate G. Harrower—p. 148

Roentgen Treatment of Cancer of Lung—Roberts reports nine cases of malignant disease of the lungs in which roentgen treatment was used. In six cases the plant used was a double coil, giving a potential of 180 kilovolts, filter 0.5 mm. of copper plus 1 mm. of aluminum, focus skin distance, 23 cm., applicator circular, with a diameter of 8 cm. The other three patients were treated with a condenser plant giving a constant potential of 200 kilovolts, filter 1 mm. of copper plus 1 mm. of aluminum, focus skin distance, 30 cm., applicator rectangular, 8 by 10 cm. These conditions gave at 10 cm. depth of water about 30 per cent of the skin dose. Treatment was given weekly or biweekly to one, two or sometimes three fields at each sitting, the dose to each field being from 75 to 80 per cent of the erythema dose. The fields were selected according to the position and extent of the tumor as revealed by roentgen examination and were varied so as to produce an even irradiation over the whole of the skin field. Such intensive treatment produced a deep and fairly uniform tanning of the skin. The amount of radiation was limited only by the tolerance of the skin, for since these patients cannot be cured the danger of later after-effects to the skin does not arise. With the exception of the one patient whose condition was already advanced, none of the patients have suffered any ill effects from treatment. The author is convinced that cases such as these cannot be treated on a preconceived idea of a "cancerous dose." Irradiation must be carried out up to the point of saturation. Every month or in some cases twice a month roentgenograms were taken under standard conditions and the tumor was measured. The author concludes that in malignant disease of the lung roentgen treatment, if carried out intensively, causes temporary recession of the primary tumor, reexpansion of the collapsed lung and a disappearance of the enlarged cervical glands. Whether it prolongs life or not, it certainly provides a survival period of a comparatively high degree of comfort, the inevitable end being rapid instead of a prolonged agony.

Cystic Hygroma Treated by Sodium Morrhuate—Harrower chose sodium morrhuate in the treatment of a case

of hygroma, because it occurred to him that one of the more modern sclerosing fluids might be effective. He believed sodium morrhuate to be least destructive to the subcutaneous tissues in the event of leakage. The swelling was aspirated and 4½ ounces of brownish fluid withdrawn, and 2 cc. of a 5 per cent solution of sodium morrhuate was injected into the cyst. The next day it was seen that the cyst was filling again, and the swelling had increased to more than half the size it was before aspiration. On the following day there was no further increase, and on the third day following the injection of the sclerosing fluid the swelling was definitely smaller. Six days after the injection of the sodium morrhuate solution, swelling was considerably reduced, and on the following day the cyst was again aspirated. About 2 ounces of fluid of similar appearance but somewhat thicker in consistency was withdrawn and 5 cc. of the sodium morrhuate solution was injected. The next day the swelling had increased slightly, apparently owing to the irritation of the sclerosing medium. Thereafter the growth gradually subsided. The skin around the site of injection was treated periodically with methylated spirit and talcum powder and it slowly recovered its vitality. The tumor disappeared at the end of a month, also the nodules in the submandibular region, and only a small area of inflamed skin remained. Throughout the entire treatment the child showed no systemic inflammatory reaction and its health was in no way affected. The pulse and temperature remained normal, except for a few days, when enteritis developed with green diarrhea, which was quite unconnected with the injection treatment. The author is of the opinion that sodium morrhuate offers an easy and safe method of treating cystic hygroma.

Guy's Hospital Reports, London

83 259 386 (July) 1933

Sir Charters Symonds G. F. Stebbing—p. 259

Studies on Tumor Formation G. W. Nicholson—p. 273

*Friedman Test for Pregnancy Analysis of Results of a Year's Experience and a Suggested Modification P. M. F. Bishop—p. 305

Chronic Duodenal Ileus with Symptoms of Cyclical Vomiting Recovery Following Operation Case C. H. Fryge and A. F. Hurst—p. 336

Duodenal Intubation in Gallbladder Disease F. A. Knott—p. 347

Studies in Bright's Disease VIII Observations on Etiology of

Scarlatinal Nephritis A. A. Osman H. G. Close and H. Carter—p. 360

Friedman Test for Pregnancy—Bishop describes his modification of the Friedman reaction, in which an adult female nonpregnant rabbit is employed. For the diagnosis, 10 cc. of urine is injected intravenously. After an interval of at least thirty-six hours the abdomen of the animal is opened in the midline under ether anesthesia and the ovaries are inspected, care being taken not to displace them for fear of damaging the blood supply and thereby preventing them from being stimulated by any subsequent intravenous injection of urine. The abdomen is then closed in one layer with catgut or Chinese silk, and the skin is sewed up with Chinese silk. The wound is painted with alcohol. Should hemorrhagic bodies be absent at this first laparotomy, the rabbit is injected with urine obtained from a woman known to be pregnant and after a further interval of at least thirty-six hours the rabbit is submitted to a second examination. If on this occasion hemorrhagic bodies are still absent, the animal is considered resistant to urine of pregnancy and discarded, the test being repeated on another rabbit. If hemorrhagic bodies are present at the first laparotomy the test is positive. If they are present at the second laparotomy but not at the first, the subject is not pregnant. The experimental studies with this test show that: 1. The active principle in the urine on which this test depends remains potent for at least six days after the urine has been voided. 2. The Friedman reaction is positive as early as twenty-one days after conception. 3. It becomes negative between forty-two and forty-eight hours after parturition. 4. Blood from the umbilical cord does not give a positive reaction. 5. Mechanical stimulation of the neck of the uterus in the rabbit tends to produce fresh yellow bodies, whereas the injection of urine of pregnancy almost invariably produces hemorrhagic bodies. 6. Cerebrospinal fluid obtained from a pregnant woman does not give a positive reaction. 7. The equivalent of 1/300 cc. of urine may give a positive reaction in a case of chorionepithelioma. 8. If a pregnant rabbit is used as the test object, the result may be relied on if it is

positive, but if a negative result is obtained the test should be repeated. 9 Urine in cases of disorder of the pituitary may contain an excess of prolan.

Indian Journal of Medical Research, Calcutta

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Value of Levulose and Galactose Tolerance Tests —

To determine the values of the levulose and the galactose tolerance tests for estimating hepatic efficiency, Rao investigated a number of patients and found that the levulose tolerance test gave positive results in a greater number of cases with liver disease than in those without evidence of hepatic disorder. In some cases with definite evidence of liver disease the test gave negative results and hence the author concludes that the test cannot be considered of diagnostic importance in any individual case. He thinks that the variable results obtained by the levulose tolerance test in cases of cirrhosis of the liver are due to the regeneration of the hepatic tissue and that a negative test in these cases cannot exclude liver disease as it indicates only that a sufficient amount of actively functioning liver tissue is left to maintain the carbohydrate metabolism. The test becomes positive only when there is diffuse destruction of the hepatic parenchyma together with failure of regeneration. Though the galactose tolerance test of Bauer has its own advantages, it is misleading to depend on the urinary observations alone and the total amount of galactose excreted in the urine is too variable to permit it to be considered a guide to hepatic efficiency.

Journal of Neurology and Psychopathology, London

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- Recurrent Polyneuritis in Pregnancy and Puerperium Affecting Three Members of a Family C C Ungley —p 15
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Polyneuritis in Pregnancy—Ungley describes a syndrome consisting of lower motor neuron paralysis of irregular distribution, preceded and accompanied by sensory disturbances which affected three members of a family at different times over a period of twenty years and showed a marked tendency to recur after childbirth. The mother developed unilateral wrist drop

at the age of 39, a few days after the termination of her fifth pregnancy, having suffered from severe pains in the affected arm for three months previously. Similar pains had occurred at the age of 26, but without loss of power. Now, twenty-one years later, there is some residual paralysis of the extensors of the wrist and fingers. The younger daughter, at the age of 23 suffered from similar pains in one shoulder and arm during the latter months of her first pregnancy with rapid involvement of the other limb after parturition, and subsequently showed in the upper limbs asymmetrical wasting of peculiar distribution with localized areas of anesthesia, gradual but almost complete recovery followed. The other daughter, at the age of 29 had pains in the right shoulder and arm followed soon afterwards by wrist drop and by paralysis of the small muscles of the hand on the affected side. Pains and localized anesthesia occurred in the opposite arm. Recovery followed and she married. Two weeks after the birth of her first child pains recommenced in both shoulders, with paresis of both deltoid muscles. Wrist drop again developed, this time on the left side, and was followed by extensive but asymmetrical wasting of both shoulder girdles and of other muscles of the upper limbs. The subsequent recovery has been almost complete. Investigations have so far failed to throw any light on the etiology. The possibility of lead or some other extrinsic toxic substance as an etiologic factor is not likely as there has been no evidence of such intoxications. There have been no signs of syphilis or other infection of toxemia of pregnancy or of vitamin B deficiency. Examination of the cerebrospinal fluid, gastric contents, blood and urine has revealed no significant abnormality. Hematoporphyrinuria has never been a feature of these cases. No cervical ribs and no changes in the vertebral column were visible on roentgen examination. There are no nodules to be felt along the peripheral nerves, such as might suggest hypertrophic neuritis.

Journal of State Medicine, London

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Lancet, London

2 169 222 (July 22) 1933

- Problems of Spinal Anesthesia C A Pannett —p 169
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- *Complement Fixation Experiments on Two Hundred Strains of *Corynebacterium Diphtheriae* J Menton T V Cooper and W H Fuxell —p 180

Complement Fixation Experiments on *Corynebacterium Diphtheriae*—Menton and his associates in their complement fixation experiments on 200 strains of *Corynebacterium diphtheriae* used saline suspension antigens prepared from twenty-four hour smooth cultures grown on agar and killed with formaldehyde. The antisera were prepared from rabbits and the hemolytic system consisted of washed red blood cells of sheep and amboceptor (titer 1:2,000). Owing to the close relation of the grave, mild and intermediate types, cross tests were necessary to obtain any type indications. The tests were graded by diluting the antigen but in order to get reliable comparisons each antigen was carefully standardized by the opacity method. The tests were incubated for forty-five minutes in the water bath at 37°C, the hemolytic system was added, and the results were read after a further incubation of thirty minutes. The authors found that the serologic relation between the three types is close. The grave type was more antigenic than the other two. To obtain fixation with their antigens of *Corynebacterium diphtheriae* and their corresponding antisera, the bacterial suspensions had to be used ten times as strong as those required for the salmonella experiments. The grave type proved to be more distinct than the other two. Of these strains 95 per cent in the first 100 strains and 68 per cent in the second gave

results true to type. The typical "intermediate" strains were more closely related to the grave type than were the mild strains. Of the twenty-seven intermediate strains tested, seven gave grave results, and of the eighty-three mild strains tested only three gave grave results, but these were in the first 100 strains in which an intermediate serum was not used. When three serums were used not a single mild strain gave a grave result. Individual intermediate and mild strains varied greatly in antigenic activity. Some mild and intermediate strains could be separated only into groups rather than into definite types. This is particularly shown by the results obtained from mild strains when three serums were used. Only 29 per cent gave results true to type, 29 per cent gave intermediate results and 42 per cent gave no indication whatever. Of the twenty-three irregular strains in the second 100 strains which could not be classified by the Leeds method, ten gave intermediate reactions, seven no indication, three mild and three grave, showing that these irregular strains were heterogeneous antigenically. In the first 100 in which only grave and mild serums were used, twenty-three irregular strains were tested, of which twelve proved to be grave, eight mild and three gave no indication. It is likely that, had an intermediate serum been available in these cases, a large number of apparently grave results would have turned out to be intermediate and so given a closer correlation with the second batch of irregulars. Ten normal human serums fixed the three types feebly (1-4) and equally. In complement fixation with bacterial antigens, many inculcable factors are involved. The authors tried to control some of them by doing comparative cross tests with antigens prepared in an identical manner. There are, however, strain peculiarities which cannot be gaged accurately, such as the rate of autolysis and the physical conditions affecting adsorption. With these reservations, they contend that serologic grouping by this means does not coincide with the method of classification suggested by the Leeds workers.

Medical Journal of Australia, Sydney

2 97 130 (July 22) 1933

Perspective in the Examination, Prognosis and Treatment in Heart Disease. N. W. Markwell—p. 97

*Trichomonas Vaginalis Vulvovaginitis. H. Jacobs—p. 111

Trichomonas Vaginalis Vulvovaginitis—Jacobs believes that the best treatment for trichomonas is that in which the perineum, vulva and vagina are first cleansed with ether soap and then treated by topical applications of mercurochrome, methylene blue, brilliant green and glycerin, kaolin or an alkaline powder. Kleegman's treatment consists of the application of mercurochrome and Lassars paste. Sure and Bercey recently have reported promising results with the use of pulverized quinine sulphate. The author used hexylresorcinol in treating a sufficient number of cases, obtaining such immediate improvement and such rapid cure that it would appear almost specific in its efficacy. His technic has been as follows: The patient receives treatment on three successive days, then each alternate day for three more treatments. On the days when no treatment is given, the patient takes a vaginal douche of lactic acid, 1 fluidrachm to a pint of water. This is continued until the next menstruation, after which any discharge is examined. In many cases this has sufficed for a cure, but in some trichomonas was still present, although there was little discharge. These patients received a second course of treatment and cure was obtained. In one hospital patient with a severe discharge six treatments only, at intervals of one week, and the use of the lactic acid douche, resulted in cure. In every case the first application gave immediate relief. For the actual method great care must be taken to enable the solution to reach all folds after careful drying of the mucosa following the application of green soap. Only when the life history of *Trichomonas vaginalis* has been completely described will prophylaxis be understood and curative treatment rationalized.

Tubercle, London

14 433 480 (July) 1933

Guiding Principles in Diagnosis, Treatment and Prognosis of Genito-Urinary Tuberculosis. A. von Lichtenberg—p. 433

Some Clinical Types of Tuberculosis. L. S. T. Burrell—p. 442

Morbid Anatomy and Histology of Asbestosis. S. R. Gloyne—p. 445

Journal de Chirurgie, Paris

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*Deep Plantar Phlegmons. H. Constantini and H. Liaras—p. 376
Fibromas, Fibromyomas and Myomas of Rectum. R. Bensaude, A. Cain and A. Poirier—p. 340

Treatment of Recent Fractures of Neck of Femur. M. Boppe—p. 346
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Osteosynthesis by Steel Splints Anchored to Bone. P. Reinhold—p. 374

*Traumatic Chylothorax. A. Mouchet—p. 386

Deep Plantar Phlegmons—Constantini and Liaras state that every plantar phlegmon is an indication for immediate surgical intervention. Deep plantar phlegmons usually spread posteriorly in the calcaneotibiotarsal canal and upward between the two muscular layers of the calf, usually stopping at the ring of the soleus. Tibiotarsal arthritis is a common complication and thrombosis of the vessels in the calcaneotibiotarsal canal may occur. For the treatment of a marginal abscess of the foot affecting the abductor of the fifth toe, a large incision made early usually suffices. For a deep phlegmon that has not invaded the calcaneotibiotarsal canal, the sole of the foot should be incised from end to end, following the zone of greatest pain and stopping at the tibio-calcaneal canal. A dorsal counterincision, if there is edema of the back of the foot, is recommended. If the plantar phlegmon has spread to the calcaneotibiotarsal canal, an initial malleolar incision curving around the malleolus and just in contact with it should be made and the suppuration exposed. From here the purulent fistula should be traced in both directions. If the fistula follows the flexor tendon of the large toe, the incision should follow this tendon up to the digitoplantar fold. If, as usual, the suppuration spreads over the sole of the foot, the incision follows the axis of the foot parallel to the third interosseous space. Toward the leg the incision follows the interior surface of the tibia. The anterior gastrocnemius is pushed back, and the tibial insertions of the soleus are detached extensively exposing the deep vasculonervous tissues of the leg. In case of dorsal edema, dorsal incision is advisable and if pus has spread in front of the Achilles tendon an external incision behind the fibula is recommended. In case of synovitis of a toe or infection of a crushed toe with involvement of the plantar region, the sole of the foot should be incised in the direction of the calcaneal canal to the end of the purulent fistula. If there are osteo-articular complications, the tibiotarsal joint must be opened and the talus removed for drainage. Osteitis of the metatarsals demands amputation. If the general condition is alarming, amputation is the wisest procedure even if only a tibiotarsal arthritis is found.

Traumatic Chylothorax—Mouchet studied forty-three cases of chylothorax reported in the literature. Of these, thirty-two were produced by internal trauma without open lesion. In twenty-one cases the chylothorax was on the right side, in seven it was on the left and in four it was bilateral, indicating that in most cases the rupture of the thoracic duct occurred in the lower part of the thorax. The rupture of the thoracic duct in most cases was produced by fracture of a vertebra, in one case by fracture of a rib and in one case possibly by fracture of the clavicle. In some cases chylothorax followed a trauma without the production of a skeletal lesion. In these cases the rupture of the thoracic duct probably resulted from overdistention of the duct favored by repletion during digestion. The author thinks that in the majority of cases the pleura is ruptured simultaneously with the thoracic duct and the chyle is aspirated directly from the ruptured canal into the pleural vacuum. Clinically, recovery from the shock of the trauma is followed by an interval of from three to four days without symptoms before the pleural effusion is revealed by the sudden onset of dyspnea, agitation, profuse sweats and cyanosis. Pleural puncture permits the withdrawal of chyle. Occasionally, cure follows a single evacuation, but usually each aspiration is followed by a new effusion, and loss of weight, oliguria and severe asthemia lead to death from inanition. Eleven cases of chylothorax were caused by open lesions, usually located in the neck with the resulting effusions on the left side. In this form gaseous effusions, flow of chyle from the wound and infections may occur in addition to the other symptoms. Diagnosis is made by examination of the liquid of effusion to

determine whether it is chyle. The prognosis is grave, with 41 per cent of deaths in forty-three cases. Siphonage is to be avoided, as it favors eruption of the chyle. Generally, treatment should include a diet to reduce the production of chyle. Symptoms of compression demand evacuation, but this should be incomplete (except in case of shock) to avoid the return of the pleural vacuum. A small effusion requires no treatment, if it is abundant and recurrent, two or three aspirations should be made and, if the effusion still continues to be rapidly produced, thoracotomy is indicated. Injury to the cervical portion of the thoracic duct may require ligation or tamponade. Infection of the effusion demands thoracotomy with drainage.

Presse Medicale, Paris

41 1449 1464 (Sept 20) 1933

Medical Doctrines Introduction to Study of Modern Immunology A Tzanck—p 1449

*Parenteral Protein Therapy in Treatment of Gastroduodenal Ulcers B O Pribram—p 1453

Suspensions of Gold Salts in Oil in Treatment of Pulmonary Tuberculosis A. Giraud—p 1456

Parenteral Protein Therapy for Gastroduodenal Ulcers

Pribram considers parenteral protein therapy the method of choice in the treatment of gastroduodenal ulcers. His opinion is based on an experience of thirteen years, covering more than 500 cases. He thinks that the effects of this therapy are attributable to the following modifications produced by the protein injections: (1) abolition of the muscular spasm and relative quietness of the ulcer with consequent disappearance of the pain and increase of the alimentary tolerance, (2) abolition of the angiospasm and hyperemia, (3) restoration of the inflammatory reaction in the region of ulceration, (4) increase of the capacity for regeneration of the tissues and (5) increase of the quantity of antipepsin in the blood. The author uses a crystallized vegetable protein, injected intravenously. The treatment consists of a total of not more than eight or ten injections, starting with a small dose to produce a slight general reaction and continuing with gradually increased doses given as soon as the signs of the previous reaction have disappeared. Improvement is sometimes noticeable after the first or second injection. Cures were obtained in from 60 to 70 per cent of the author's cases while some of the others were noticeably improved. All the patients were referred to him for surgical intervention because of the failure of medical and dietetic treatment. The success of the protein therapy has limited the indications for surgical intervention to emergency cases (perforation), cases presenting chronic hemorrhages and cases in which protein therapy has failed after a minimum of two series of injections. The only contraindication is tuberculosis, even the latent forms, as the injections may reawaken the foci of infection.

41 1465 1480 (Sept 23) 1933

Carbon Dioxide and Thermal Carbonic Gases in Subcutaneous Injection and Inhalation in Angina Pectoris and Intermittent Claudication C. Lian and R. Barriau—p 1465

*Auto-Urotherapy H. Jausion, R. Giard and G. Martinaud—p 1467
Character of Cultures of Tubercle Bacilli Isolated from Guinea Pigs Inoculated with Filtrates of Cultures or Pathologic Tuberculous Products and Treated with Injections of Acetone Extract of Tubercle Bacilli L. Negre, J. Valtis and F. van Deinsen—p 1471
Irradiated Sterols and Ultraviolet Rays: Physiologic and Therapeutic Differences P. Duham and E. Huant—p 1472

Injection of Urine in Allergic Diseases—Jausion and his associates state that the therapeutic injection of a patient with his own freshly collected and antiseptic urine (first reported by Jausion and Paleologue in 1929 under the term of auto-urotherapy) is more logical than autohemotherapy. In the urine are eliminated the endo antigens and exo antigens responsible for many allergic conditions, by reinjecting the urine into the patient it is possible to desensitize him to these antigens. As the urine is free from albumin (except in pathologic cases) it produces no shock. The urine is collected under antiseptic precautions and one drop of phenosalol or iodized alcohol is added for each cubic centimeter of urine. After mixture of the urine and the antiseptic has been obtained by repeated aspirations into a syringe it is allowed to stand for five minutes, this may be extended to thirty minutes for a urine with high bacterial content. The urine is then injected subcutaneously

or intramuscularly, in case of turbid urines injection should be subcutaneous. The injections should be given at intervals of from two to four days, with the dosage increased gradually from 0.5 to 5 cc. This therapy was successful in 336 of 372 cases of allergic diseases, including cases of migraine, pruritus, hay fever, asthma, urticaria, prurigo, strophulus, acute or chronic eczema, parakeratosis, psoriasisiformis and psoriasis. Auto-urotherapy is not effective in the driest forms of eczema or in parakeratoses. It is contraindicated in chronic suppurations, pyococcic skin diseases, anthrax, furunculosis, impetigo and ecthyma without eczematization. The urine also contains hormones capable of influencing the vagosympathetic system and to these the authors attribute the good results obtained in some cases of Raynaud's disease, intermittent claudication, insomnia due to sympathetic hypertonia, and so on. They think the auto-urotherapy causes a vagal discharge, liberating in hypervagotonia due to antigens, corrective in neurosympathetic dystonias. While contraindicated in extra-urinary infections in infections limited to the urinary tract auto-urotherapy is an effective way of vaccinating against the urinary bacteria, especially in descending pyelonephritis caused by the colon bacillus.

Archivio Italiano di Chirurgia, Bologna

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*Heterotopic Ossifications G. Ceccarelli—p 109

Clinical Contribution to Study of Hepaticoduodenostomy V. Ghiron—p 160

Surgical Immobilization of Thorax V. Bonomo—p 169

Dermoid Cysts of Mouth Case A. Catterina and E. Savarese—p 172

*Effect of Splenectomy and of Sympathectomy of Splenic Artery on Peripheral Circulation G. Lucchese—p 187

Spontaneous Torsion of Testicle Two Cases V. Bonomo—p 197

Resection of Nodular Cancer of Right Hepatic Lobe and Ideal Intra-peritoneal Burial of Liver Cure P. Bastianelli—p 207

Experimental Research in Study of Articulations by Means of Introduction of Opaque Liquids A. Bobbio and A. Picco—p 213

Heterotopic Ossifications—Ceccarelli cited a case of ossification occurring in an operative scar (supra-umbilical incision) and refers to the literature on the subject of heterotopic ossifications. The author attributes a certain osteogenic influence to hematomas. The products of albuminoid destruction in hematomas often bring about deposits of calcium salts leading to ossification. Hematomas are considered less important than operative wounds in the causation of ossifications. The author tried to follow the neoformative process of the heterotopic bone. He experimented with rabbits, in which the vasa pedicle and renal artery of the normal kidney were ligated, causing hydronephrosis, thus predisposing the kidney to ossifications. On the basis of this research, the author maintains that the formative elements of bone arise from the connective tissue through a process of indirect metaplasia. He stresses the importance of the presence of calcium salts in heterotopic ossification. The products of albuminoid decomposition are produced in necrotic degenerative foci in which calcium salt deposits are often found. These ossifications following trauma or operations are generally preceded by a disturbance in circulation. The circulatory modifications cause a reaction in the connective tissue with return to the embryonic state and cause the appearance of cellular elements (polyblasts and hemohistioblasts) in the area where the stimulus has acted. If these elements are found in a location rich in calcium salts, they may be differentiated not only as fibroblasts and chondroblasts giving rise to connective scar tissue but also as osteoblasts or chondroblasts giving rise to real osseous tissue through the contemporary appearance of the marrow series. The depositing of calcium salts is attributed to modifications of the pH of the ionic state of the colloidal state and of the area in which the salts are found dissolved. These biochemical modifications explaining the formation of calcareous concretions are not, however, the basis for ossification. The author maintains that the osteoblasts represent the trophic center of ossification and at times lend impulse to the change of the chemical state of the calcium salts which absorb the osteoid tissue. Through the abnormal stimulus coming from particular biochemical modifications in a determined tissue the undifferentiated polyblastic cells receive an impulse which evolves toward the differentiated series up to the more complete and complex formation of it which is the osseous tissue containing marrow.

Effect of Splenectomy on Peripheral Circulation—Lucchese studied in rabbits the function of the spleen with reference to the peripheral blood and found that after splenectomy the same functional modifications take place as after sympathectomy of the splenic artery. He observed a temporary diminution of globular resistance, a marked increase in the number of platelets and a shortening of the coagulation time. Subcutaneous injections of epinephrine in rabbits not yet splenectomized showed an increase of leukocytes with a predominance of lymphocytes. Thus there was always a normal epinephrine lymphocytosis. After splenectomy there was a considerable increase of leukocytes with a predominance of neutrophilic polymorphonuclear cells. The same observation was made after periaarterial sympathectomy of the splenic artery when an epinephrine lymphocytosis was replaced by an epinephrine neutrophilic leukocytosis. The author states that following splenectomy as well as sympathectomy there is no appreciable modification of the number of erythrocytes, the number of leukocytes and the leukocytic formula, no bilirubin is found in the blood plasma and marked congestion and stagnation of the veins of the splenic pulp remain unmodified.

Policlínico, Rome

10 497 564 (Sept 15) 1933 Surgical Section

Adenocarcinoma of Testicle in Child Aged 16 Months C de Pol—p 497

Drainage of Biliary Tract C Gucci—p 503

*Prostatectomy in Nephrectomized Patients C M Le Roy—p 509

Postoperative Complications Pallor Syndrome and Hyperthermia in Surgery of Infants A Mann—p 516

Pathology of Common Mesentery and of Intestinal Dystopia in General C Scallo—p 530

*Cholecystography According to Antonucci's Method G Zappalà—p 541

Prostatectomy in Nephrectomized Patients—Le Roy cites a case of prostatic hypertrophy and urinary infection of ten years' duration before the right kidney was resected for hypernephroma. Prostatectomy for adenoma was later performed in two stages. The author reviews the literature on the subject and states that cases are rarely found in which prostatectomy is performed on nephrectomized patients. He maintains that persons having lost one kidney show as much resistance to intoxication and infection as normal persons. In prostatic patients the imminent extirpation of a kidney does not constitute a contraindication for adenomectomy, provided the remaining kidney is healthy. In these cases, operation should be performed at once in order to avoid such complications as urinary infection and pyelonephritis.

Cholecystography According to Antonucci's Method—Zappalà describes the technique of Antonucci's method of rapid cholecystography (*Policlínico* [sez med] 40 128 [Feb 1] 1933, abstr THE JOURNAL, April 15, 1933, p 1212) and reports the results of his experiments on 300 patients and normal persons. Operative control of 100 of the patients demonstrated perfect correspondence between the degree of alteration of the wall of the gallbladder and its degree of roentgenologic opacity. In healthy persons it always showed positive results. The author states that Antonucci has not introduced a new contrast medium but has added dextrose, which accelerates the velocity of elimination of the color medium from the liver. The author's experiments reveal that the greater velocity of elimination of tetraiodophenolphthalein in the Antonucci method is determined by a more rapid transfer of the substances of the liver to the bile. The fundamental fact determining this is hyperglycemia, but the mechanism through which the liver passes the color medium to the biliary tract still remains obscure. Several authors state in this respect that dextrose exercises a stimulus on the hepatic cells. The author does not accept this interpretation, since the hyperglycemia of a diabetic patient determines a rapid cholecystography and there certainly can be no stimulus of the dextrose on the hepatic cells in diabetes. The administration of the Antonucci method is simple and the disturbances that may arise are not different from or more serious than those encountered in the intravenous method of Graham. The advantages of this method lie in its great sensitivity, its rapidity and its revealing of slighter cholelithic diseases. The method possesses great precision and can always be applied in doubtful cases of gallbladder disease for definite diagnosis.

Revista de Gynecologia e d'Obstetricia, Rio de Janeiro

27 295 342 (Aug) 1933

Importance of Vaginal Flora S Orlandini Mattos—p 295

Impregnation of Hymen Case O Villaga—p 302

*Chorio Epithelioma with Positive Results of Aschheim Zondek Test Case P Sa—p 306

Chorio-Epithelioma and the Aschheim Zondek Test—Sa states that the concentration of hypophyseal hormones in the urine of pregnant women is lower than that in the urine of women having uterine mole or chorio epithelioma. The persistence of positive results of the Aschheim-Zondek test with a concentration in hormones higher than that which may be an indication of an intercurrent pregnancy, following a molar abortion either complete or completed by means of curettage, is a diagnostic sign of the presence of chorio-epithelioma and a therapeutic indication for the performance of a total hysterectomy, even in young women. The author's patient, aged 22, had an incomplete hemorrhagic molar abortion, which was finished by means of curettage. The hemorrhage ceased and the patient was discharged from the hospital, apparently cured. After this event, however, she presented a condition of incipient eclampsia. The Aschheim-Zondek test, performed thirty eight and fifty-three days after the molar abortion, gave positive results with a high concentration of prehypophyseal hormones. Total hysterectomy was followed by complete recovery. The patient gained weight and there was a great improvement in her general condition. This improvement has persisted one year after the operation and no metastases have appeared. The histologic study of the uterus removed at the operation gave a diagnosis of chorio epithelioma.

Archiv für Dermatologie und Syphilis, Berlin

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Investigations on Quantitative Relation Between Sensible and Insensible Perspiration J K Myr—p 1

Aspects of Mycosis Fungoides H Holtkemeier—p 13

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Sugar and Glutathione Content of Blood and Skin in Dermatitis Produced by Quartz Lamp and Croton Oil Problem of Peripherally Produced Metabolic Processes C Moncorps R M Bohstedt and R Schmid—p 67

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Further Investigations on Circulatory Conditions in Varicose Veins and Their Relations to Crural Ulcers and Eczema H Haxthausen—p 88

Fungal Diseases of Human Nails S Wolfram and F Zach—p 95

Formations Resembling Tactile Corpuscles in Cellular Nevus of Scalp Aspects of Neuronevus Neurinoma Psammoma Cutis and Pseudocutis Verticis Gyrali and Multiple Neurofibromas P Jordan—p 105

*Cutaneous Epinephrine Reaction and So Called Hyperepinephrinemic Disorders J Sella—p 127

Case of Rudimentary Scleroderma and Calcareous Gout K Steiner—p 142

Endocrine Disturbances in Thrombo-Angitis Obliterans—Three cases of Burger's thrombo angitis obliterans were studied by Nusselt. From observations on the epinephrine and sugar content of the blood in these cases he assumes a hyperepinephrinemia. A hyperfunction of the suprarenals has likewise been assumed in Raynaud's disease which presumably is related to Burger's disease. On the other hand, resection of the splanchnic nerves, which according to some authorities reduces the production of epinephrine, has effected favorable therapeutic results in Burger's disease. The vasodilatory, pancreatic circulatory ferment, the antagonist of epinephrine which other authors found helpful in Burger's disease, failed in the author's cases. He believes that the hyperthyroid sympathicotonic metabolism which he observed in these cases of Burger's disease is probably the constitutional foundation of the disease.

Cutaneous Epinephrine Reaction—Sella shows that the human skin is highly susceptible to epinephrine. Epinephrine introduced into the organism by iontophoresis probably stimulates the suprarenals to increased elimination. Thus epinephrine is mobilized in the organism for a shorter or longer period, and the duration of this mobilization can be controlled by cutaneous tests. The injection of the serum of a person who has been treated with epinephrine produces a white spot. The reactivity of the skin can be changed by epinephrine for the

injection of a morphine solution into an epinephrinized skin either produces no reaction or weakens it considerably. It is probable that the action of the absorbed epinephrine can be intensified by the skin. The author points out that for some time it has been assumed that the so-called angiotrophoneuroses are caused by a constrictor substance particularly by epinephrine. Recently this group has been enlarged by Pals vascular spasms, by essential hypertension and by other disorders. The author emphasizes that in the so-called hyperepinephrinemic disturbances not only the quantitative determination of epinephrine is important but its production also should be considered, for it is probable that the subsequent changes are primarily the result of the increased production. In essential hypertension, in Raynaud's disease and in acrocyanosis with hyperthyroidism, an increased production could be demonstrated, and the same was true in some skin diseases, in pruritus, in some cases of chloasma of the face and in a case of psoriasis. In allergic skin diseases, such as chronic urticaria, the values were either normal or subnormal. The author suggests that these observations eventually may be utilized in the therapy.

Deutsche medizinische Wochenschrift, Leipzig

59 1481 1418 (Sept 8) 1933

- Pathogenic Significance of Enterococci M Gundel—p 1381
Role of Physician in Combat of Somatic Hereditary Disease L Kreuz—p 1385
Suicidal Attempts K Schneider—p 1389
Theophylline as Diuretic C Romer and H A Meyer—p 1391
*Intussusception of Colon as Complication of Dysentery E Holzmänn—p 1392
White (Tame) Rat as Carrier of Weil's Disease (Spiriocheta Ictero genes) P Uhlenhuth and E Zimmermann—p 1393
Regulation of Morphologic Blood Elements by Nerve Centers L Riccetti—p 1395
Present Status of Inflammatory Genital Hemorrhages and Their Treatment E Hoevelmann—p 1396
Removal of Solitary Kidney Symptomless Course of Uremia Lasting Twenty Days M Kemal—p 1398
Schools for Correction of Vision Drenkhahn—p 1399
Clothing of Unemployed H Habs and A Ehrmeier—p 1400
Suction Treatment of Hemorrhoids Contribution to History of Hemorrhoid Operations O Stahl—p 1402

Pathogenic Significance of Enterococci—Gundel gives a short survey of the microbiology of enterococci and indicates their position within the group of streptococci. He applies the term enterococci to all intestinal streptococci but he excludes the hemolytic streptococci that occur only rarely in the intestinal tract. The enterococci grow in the usual culture mediums in two types (A and B). Type A grown on blood agar is characterized by delicate blackish small to medium sized colonies with a whitish center and by a changing but generally a slight green zone in the culture medium. Type B, however, shows a much more luxuriant growth; it appears in whitish staphylococcus-like colonies usually surrounded by a fine black zone. Thus there are considerable cultural differences between the two types, but, since the examination of hundreds of strains reveals numerous transitional types the difference becomes somewhat less distinct. The author shows that, since streptococci of the same cultural behavior as the enterococci occur also in parts other than the gastro-intestinal tract it is really illogical to apply the special term enterococci to the intestinal streptococci and he thinks that to speak of pleomorphic streptococci of type A or B would be more correct. He discusses the pathogenic significance of the enterococci. He stresses particularly the role of enterococci in the inflammatory changes of the biliary tract and discusses enterococcic peritonitis and the significance of enterococci in appendicitis and in infections of the urinary system such as cystitis and proctitis. He admits that some investigators deny the causal significance of enterococci in some of these disturbances but he thinks that this is not justified if enterococci are seen in pure culture as the causal organisms of septicemias. The detection of the enterococcus may lead to the discovery of the focus of infection in the biliary tract, in the intestinal tract or in the urinary passages.

Intussusception of Colon as Complication of Dysentery—Holzmänn tells of a nursing aged 8 months who contracted dysentery. The stools contained mucus pus and blood and spasms of the colon could be felt. According to X-ray a spastic condition of the colon is quite frequent in

dysentery. The nursing's condition improved gradually, but on the fiftieth day of the dysenteric disturbance a sudden hemorrhage and prolapse from the anus occurred, a tumor was noticeable above the symphysis and bilious vomiting set in. On the basis of these symptoms the case was diagnosed as a colic sigmoidal intussusception, and this diagnosis was corroborated by digital examination. Treatment of the intussusception was followed by cure. The author thinks that the otherwise rare colic intussusception is readily understandable in cases of this nature. The portion of the intestine that has become spastically contracted as the result of the dysenteric inflammation becomes invaginated into the more flaccid portion.

Deutsche Zeitschrift für Chirurgie, Berlin

241 129 312 (Sept 12) 1933

- Determination of Skin Temperature During Anesthesia and Its Prognostic Significance N Hansen Møller—p 129
Symptomatology of Actinomycosis B Karitzky—p 155
Bloodless Operative Treatment of Hemangioma R Demel—p 166
Hemangioma of Stomach M Siebner—p 176
*Significance of Toxemia Following Operative Collapse Treatment in Pulmonary Tuberculosis E Domanig—p 188
New Methods of Skeletal Traction F Felsenreich—p 230
Possibility of Registering Joint Sounds K H Erb—p 237
Injuries in Sking and Their Causes I G Knoch—p 246
*End Results of Bloodless Reduction of Congenital Hip Dislocation F Becker—p 273
Contribution to Treatment of Spontaneous Rupture of Long Tendon of Biceps R Oppolzer—p 281

Toxemia Following Thoracoplasty—Domanig states that, after a thoracoplasty, a considerable number of his patients with pulmonary tuberculosis developed transient symptoms apparently the result of the action of toxins. The same symptoms can be occasionally observed in florid pulmonary tuberculosis and after high doses of tuberculin. These manifestations occur with greatest frequency in patients who develop complications of inflammatory nature in the postoperative period. The two at times appear simultaneously. A definite relation could not be established between the state of circulation in the postoperative period and these late toxic symptoms. Bacillemia was demonstrated by the culture method to be present in 15 per cent of the patients before the operation and in 20 per cent after the operation. Apparently bacillemia was not the cause of the toxic manifestations. There was noted a tendency to diminution of allergy to tuberculin following thoracoplasty. This was particularly the case in patients whose postoperative course was complicated by severe inflammatory states. Such patients are likewise particularly prone to exhibit manifestly toxic symptoms. The postoperative rise in allergy is to be regarded as an unfavorable prognostic sign. The author found that fresh serum of phthisical patients was more often fatal to the mouse than the serum of healthy persons. The toxic effect was greater when serum was taken from patients who had had a thoracoplasty particularly when complicated by severe inflammatory reactions. Watery extracts prepared from an extensively involved tuberculous lung were found to be definitely more toxic than those prepared from mildly diseased or from normal pulmonary tissue. The question of whether this toxic effect is the result of some specific tuberculous toxin could not be definitely answered.

Bloodless Reduction of Congenital Hip Dislocation—Becker points out that in an analysis of the results obtained from bloodless reduction of congenital hip dislocation it is essential to differentiate between those obtained at the end of treatment and those present at the end of the period of growth. The latter are, as a rule much worse than the former. He reports sixty-seven cases presenting ninety-seven dislocations treated within the last thirty years at the Erlanger clinic. The Lorenz technic of bloodless reduction was followed. In a group with a lapse of twenty years 75 per cent had a poor result and 40 per cent had a recurrence of the dislocation. Only one eighth of the cases showed anatomic healing. In all the anatomically healed cases operation was performed below the age of 3½ years. The author demonstrated in patients with a recurrence as well as in those with subluxation only the existence of pronounced alterations in the upper part of the femur and in the acetabulum such as flattening of the head of the femur, anterior torsion and coxa vara. He demonstrated by roentgen studies that even in the more favorable cases there

were changes in the femur and in the entire half of the bony pelvis. He regards it as a proof that this entire skeletal section was the seat of a developmental defect. In another group with a lapse of only five years since the reduction, five showed anatomic healing, fifteen a mild subluxation, seven a pronounced subluxation and seven an actual recurrence of dislocation. In spite of it, however, with the exception of three, the rest had excellent functional results. He concludes that the patients with mild subluxations and excellent functional results develop in the course of growth severe subluxations which finally lead to recurrence of dislocation. The excellent results here were only temporary. Only anatomically healed cases present a favorable outlook for a permanent cure. Even the mildest subluxation may lead in the course of growth to recurrence of dislocation. The author believes that the end-results may be improved by the early detection of subluxations and the application of orthopedic measures to prevent their further development.

Jahrbuch für Kinderheilkunde, Berlin

140 253 368 (Sept.) 1933

- Occurrence of Nitrate (and Nitrite) in Urine of Young Nurslings Fed Exclusively with Human Milk. W. Citel and H. Tunger—p. 253
 *Hypochloremic Coma in Nurslings with Pylorospasm (So Called Coma Pyloricum). H. Seckel—p. 263
 *New Reaction in Meningitic Cerebrospinal Fluid. J. von Ambrus—p. 311
 Rickets in Children on Island Kolguyew. N. R. Schastin and A. T. Petrajew—p. 314

Hypochloremic Coma in Nurslings with Pylorospasm—Among thirty-four nurslings with pylorospasm, observed by Seckel in the last eighteen months, there were several with peculiar disturbances of the consciousness and with abnormal respiratory movements. This hypochloremic coma, called also coma pyloricum, was studied carefully by the author. He mentions the following as the clinical characteristics: (1) disturbances in the consciousness manifested by somnolence, apathy, sopor and coma; (2) respiratory disorders, such as slow and superficial respiration, apnea, hiccup and yawning; (3) muscular hypertonia and nontetanic spasms. The metabolic anomalies are exsiccosis, which is evidenced by loss of turgor, anhydremia and albuminuria, chloropenia, manifested in achloruria and hypochloremia, hyposmosis, which is partially compensated by alkalosis, and azotemia, which, however, is rarely severe and may be absent. In patients without coma, the metabolic changes are similar but of a much milder degree. Organic pyloric stenosis in adults and in older children and induced pyloric occlusion in animals are accompanied by essentially the same comatose manifestations and by hypochloremic-alkalotic metabolic disturbances. In adults, gastric spasms and "chloroprivic uremia" predominate. The hypochloremic coma of pylorospasm has to be differentiated from the coma that occurs in alimentary intoxication. The latter form is usually hyperchloremic acidotic and, in contradistinction to the superficial respiration of coma pyloricum, it is characterized by forced respiration. For the differentiation of pylorospasm from other conditions characterized by vomiting, examination of the chloride metabolism is recommended.

Reaction in Meningitic Cerebrospinal Fluid—While studying the factors influencing the surface tension of the cerebrospinal fluid, von Ambrus observed certain reactions that he considers suitable for diagnostic purposes. He made his studies on normal and on meningitic cerebrospinal fluid and employed well water and distilled water as controls. In three series of test tubes the first contained well water, the second distilled water, the third normal cerebrospinal fluid and the fourth meningitic cerebrospinal fluid. In the first series, for each 1 cc. of fluid he added 0.1 cc. of a 2 per cent distilled aqueous potash soap colloid. The well water shows opalescence, turbidity and flocculation, but, owing to the variation in the composition of the well water, these changes are not constant. The distilled water opalesces slightly. The nonmeningitic cerebrospinal fluid shows a decided turbidity, while the meningitic fluid shows only an opalescence. The turbidity in the nonmeningitic cerebrospinal fluid is due to its low protein content, which provides only a slight colloidal protection for the cations of the cerebrospinal fluid and thus facilitates the action of potash soaps. The author asserts that this reaction is suitable for diagnostic purposes.

He describes the various changes observed in the four test tubes of the second and third series. In the second series he added for each cubic centimeter of fluid 0.1 cc. of a 20 per cent sulphosalicylic acid, and in the third series 0.1 cc. of a 2 per cent distilled aqueous potash soap colloid as well as 0.1 cc. of 20 per cent sulphosalicylic acid. He states that he has employed the reaction of the second series for a number of years, and he considers the reaction of the third series the most suitable one. Because of its simplicity he recommends the reaction for use in general practice.

Medizinische Klinik, Berlin

20 1263 1296 (Sept. 15) 1933

- "Great Psychotherapy." G. Ewald—p. 1263
 *Menopausal Edema. H. Curschmann—p. 1270
 Phrenic Exeresis. Mode of Action and Indications. J. Sorgo—p. 1271
 Pathogenesis of Accidental Cardiac Murmurs. A. V. Frisch—p. 1274
 *Postencephalitic Hyperkinesis in Form of Facial Spasms on Left Side with Synchronous Dextral Nystagmus (and Retraction) of Both Bulbi. F. T. Münzer—p. 1276
 Atypical Silicosis. H. Gerhartz—p. 1277
 *Ileus Caused by Lymphogranulomatosis of Small Intestine. A. Hammelmann—p. 1278
 Allergy and Immunity in Tuberculosis. H. Koch and E. Brudnicka—p. 1280
 Growth and Food Assimilation in Mammals. W. Wohlbiel—p. 1280

Menopausal Edema—Curschmann characterizes menopausal edema as transitory, not circumscribed but rather diffuse cutaneous swellings that gradually shade off into the normal portions of the skin. The swellings are usually rather pale occasionally of normal color, but never bluish or reddish. The sites of predilection are the hands and lower part of the arms but occasionally the legs below the knees are involved. The face is rarely affected. The edemas sometimes appear in the morning hours and disappear again in a short time, but they relapse again and again. As a rule they occur simultaneously with other psychoneural, sympathetic and vasomotor disturbances of the menopause. However, they may outlast the years of the climacteric and may relapse for a decade or more. The author states that since he has watched for this edema he has observed it frequently together with other disturbances of the menopause. Most women who had these swellings developed a morbid anxiety about renal or cardiac dropsy, and some physicians who do not understand the true nature of these edemas support the patients in their fear or may diagnose the condition as hypothyroidism. The author discusses two case histories and was able to demonstrate that the edemas were not of renal, cardiac or thyrogenous origin.

Postencephalitic Hyperkinesis—Münzer reports the history of a girl who is now 10 years old. The child presents a hyperkinetic syndrome, characterized by intermittent attacks of a tonic spasm in the region of the left facial nerve with synchronous dextral nystagmus of both eyeballs. In addition to this there are mild paresis in the region of the left facial, trigeminal and hypoglossal nerves, late symptoms of a paresis of the left upper extremity and trophosecretory disturbances evidenced by skeletal anomalies (left lower jaw, vertebral column), by cyanosis of the left side of the head and of the homolateral arm and by hyperhidrosis of these regions. The anamnesis revealed that the disorders dated back to a febrile disturbance during the sixth month of life, and the author assumes that this must have been an epidemic encephalitis. This is borne out by the acute symptoms, by the further course and by the fact that the disturbance occurred during an epidemic of encephalitis. The author considers the report of this single case warranted, because he found no analogous report in the literature and thinks that as a postencephalitic syndrome this form of hyperkinesis deserves attention.

Ileus Caused by Lymphogranulomatosis—Hammelmann reports a case of intussusception ileus caused by a lymphogranulomatous tumor in the upper jejunum. The operation disclosed a tumor the size of a small hen's egg. To loosen the intussusception proved difficult, and it became necessary to resect 40 cm. of the small intestine. Several enlarged mesenteric lymph nodes were also removed. The operation proved successful, but later the patient developed a transverse myelitis which resulted in paralysis of both legs and impaired the function of the urinary bladder, of the rectum and of practically the entire lower part of the body. The author thinks that this disturbance

of the central nervous system was likewise caused by the lymphogranulomatosis. He points out that cases of lymphogranulomatosis of the intestinal tract are relatively little known and that a case of ileus resulting from a lymphogranulomatous tumor has never been reported.

Munchener medizinische Wochenschrift, Munich

SO 1185 1422 (Sept 8) 1933

- Color Blindness and Color Sense. Fundamental Problems of Their Estimation. E. Engellking—p 1385
Explanation of Diphtheria Immunity. T. H. Lorentz—p 1388
*Failure of Carotene?—Therapeutic Action of Whole Milk and Cod Liver Oil in A-Vitaminosis of Nurslings. E. Wieland—p 1389
Thrombosis of Coronary Arteries in Diabetes Mellitus. H. Eschbach—p 1392
Experimental Tomato Tumors. O. Schurch and M. Zehnder—p 1395
Foreign Bodies in Rectum. W. Lohmüller—p 1396
Tooth Extraction in Practice. A. Krecke—p 1396
*Treatment of Eczemas in Children. F. Gierthmühlen—p 1398
Therapy of Bleeding Gastric Ulcer. L. Bogendorfer—p 1400
*Treatment of Bronchial Asthma by Means of Benzine and Hydrocarbons. J. Kariukstis—p 1401
Investigation on New Type of Crutgut. J. W. Jotten and H. Reploh—p 1402
Further Development of Gastroscoy with Aid of Flexible Instruments. N. Henning—p 1404
Finger Contractions in Women Milkmen. T. Baumgartel—p 1405
Clinical Diagnosis of Cardiac Infarct. H. Lotze—p 1406

Treatment of A-Vitaminosis in Nurslings—Wieland reports the history of a male nursing, who developed dyspepsia when breast feeding was interrupted. In the course of the treatment for dyspepsia he was put on a diet of skimmed human milk. He became atrophic and developed a hemorrhagic diathesis and xerophthalmia with keratomalacia. In order to counteract the xerophthalmia, therapy with vitamin A was resorted to. The nursing was given ten drops of an oily carotene solution three times daily, but, although the hemorrhagic diathesis disappeared gradually, the eye disorder was not influenced by the carotene medication and was even exacerbated. Then the nursing was given whole human milk and, in addition to it, cream and cod liver oil. Under this treatment the weight increased and the photophobia and the discharge from the eyes disappeared. After three months the nursing's general condition had sufficiently improved so that he could be discharged from the hospital, but he was still amaurotic. The author cites other examples of keratomalacia in nurslings who had been fed with skimmed milk and discusses various theories on the failure of the carotene treatment. He thinks that the nursing's eyesight might have been saved if cod liver oil had been given earlier.

Coronary Thrombosis in Diabetes Mellitus—Eschbach shows that the concurrence of disease of the coronary arteries with diabetes mellitus is more frequent than is generally assumed. He observed diabetes mellitus in 20 per cent of the cases presenting occlusion of the coronary arteries. On the basis of his observations in fifteen cases he rejects the opinion that diabetes mellitus complicating a disturbance of the coronary arteries is generally benign for he found it to be severe in most cases. If glycosuria is not detected until after the first signs of coronary thrombosis appear it is necessary to ascertain whether the glycosuria is really of diabetic origin, because coronary thrombosis frequently concurs with cerebral embolisms and thus the glycosuria may be of cerebral origin. The differentiation of cerebral and diabetic glycosuria is important for the therapy. In precomatose conditions with noticeable peritoneal manifestations, it may be difficult to determine whether a coronary thrombosis is present or not, only the complete success of the treatment directed against diabetic coma will exclude coronary thrombosis with certainty. The author discusses the influence of diabetic hyperglycemia and acidosis and of insulin on the heart and the circulatory apparatus. He states that intravenous administration of insulin should be avoided in case of concurrence of coronary disorders with diabetes mellitus, and that it should be given in small and more frequent subcutaneous doses. He also recommends intravenous injections of dextrose. If a comatose condition is absent it is best to treat the diabetes merely with dietary measures and try to dispense with insulin.

Treatment of Eczemas in Children—Gierthmühlen shows that the last three decades have brought great advances in the understanding of cutaneous disorders in children. The author

differentiates dermatitis intertriginosa, dermatitis seborrhoides and crusta lactea from true eczema. The latter occurs primarily in children between the third and eighteenth months of life. Most investigators consider it an allergic phenomenon, more particularly a nutritive allergy, and in order to treat this form of allergy correctly it is necessary to study the diet of the affected child for mistakes of a qualitative or a quantitative nature. It is essential to avoid overfeeding. In many instances it is possible to counteract the eczema by changing from whole milk to buttermilk or to skimmed lactic acid milk. The early addition of vegetables and fruit juices is advisable. If by changing from whole milk to buttermilk or skimmed milk the eczema does not disappear, other allergic factors, such as eggs, different types of flour or certain types of milk, must be searched for. It may for instance become necessary to replace cow's milk by goat's milk. Undernourished children with eczema have to be given adequate amounts of high-caloric foods. Eczemas in older children, which are frequently of a nervous origin, often yield to a vegetarian diet. However, nutritional therapy alone is not sufficient. The author considers ointments containing tar and powders helpful for local treatment. As especially effective he recommends a powder containing sulphur and tar. He found this preparation helpful in neurodermatitis of children of school age, but also in strophulus and in eczemas in which a pyogenic secondary infection has developed. In the latter conditions it is advisable to soften the crusts first by treating them with oil, and then to apply the tar and sulphur powder.

Treatment of Bronchial Asthma with Benzine—Kariukstis shows that benzine and benzine-like hydrocarbons are valuable therapeutic irritants. He reports the clinical histories of several patients with bronchial asthma, in whom the intramuscular injection of a preparation consisting of ten parts of purified petroleum benzine and thirty parts of olive oil promptly counteracted the asthma attacks. He considers the external quadrant of the buttocks, about three or four finger-breadths below the iliac crest, the most suitable site for the injection because there are few nerves in this region. It is advisable to give the injection quite deeply. The usual dosage is from 0.4 to 0.5 cc. In order to reduce the pain an anesthetic may be injected at the same time. The author asserts that the injections are generally well tolerated, for the focal reaction causes only slight subjective disturbances. The fear of abscess formation is entirely unjustified, as intramuscular injections of aliphatic hydrocarbons have a favorable effect on inflammatory processes. Furunculosis, for instance is favorably influenced by them.

SO 1423 1458 (Sept 15) 1933

- *Tubercle Bacilluria and Initial Chronic Caseocavernous Renal Tuberculosis. A. Dimtza and F. Schaffhauser—p 1423
Ingrown Nail. A. Krecke—p 1426
*Significance of Passage of Vitamin A into Milk. H. Fasold and H. Peters—p 1427
Is Intravenous Anesthesia with a Sodium Salt of Barbituric Acid Derivative Safe? A. Stumpf—p 1429
Oral Cavity as Site and Focus of Curious Syphilitic Processes. A. Frenzel—p 1432
Renal Disorders in This Year's Influenza Epidemic. L. Hantschmann—p 1434
Observations on Students with Influenza During this Year's Influenza Epidemic. R. Wigand—p 1435
Aspects of Relapsing Herpes Zoster. H. Grundmann—p 1437
Herpes Zoster and Chickenpox. K. Schraube—p 1438
Behavior of Early Cavern in Absolute Rest Therapy. G. Frischbier and W. Kremer—p 1438
Influence of Roentgen Therapy on Thyroid. H. G. Zwerg—p 1439

Tubercle Bacilluria—Dimtza and Schaffhauser apply the term tubercle bacilluria to the renal elimination of tubercle bacilli without tuberculous involvement of the kidneys. From observations on many cases they conclude that in case of renal elimination of tubercle bacilli there always exists an initial chronic caseocavernous tuberculosis of the kidneys and that tubercle bacilluria is out of the question. They found that during the incipient stage of chronic renal tuberculosis, owing to the still closed subcortical foci the intrapapillary foci or even the small open papillary foci a tubercle bacilluria may be simulated. This is understandable on the basis of necrotic controls, because tubercle bacilli can be bacteriologically demonstrated during the earliest stages in the smallest open ulcerous papillary foci. Moreover tubercle bacilli are eliminated from intrapapillary foci or from foci of the subcortical

medullary pyramids before leukocytes are eliminated in larger masses and while the renal function is as yet only slightly impaired. Although the authors consider the repeated demonstration of tubercle bacilli in the renal urine an initial symptom of an incipient chronic renal tuberculosis, they nevertheless demand that the definite diagnosis of renal tuberculosis should not be made and nephrectomy should not be resorted to until three factors have been established: bacilluria, pyuria and deficient function. In evaluating the various functional tests the authors state that the indigo carmine test, although helpful, is not absolutely reliable for the early diagnosis of chronic renal tuberculosis. Cryoscopy, refraction and comparative determination of urea likewise do not give reliable information about the renal function in the beginning stage of tuberculosis but do so only in the later course. The authors warn against the overevaluation of intravenous pyelography. They consider the premonitory albuminuria a much less important symptom than the demonstration of leukocytes.

Passage of Vitamin A into Milk—Fasold and Peters studied the effects produced by a concentrated cod liver oil preparation when given to lactating rats. The nursing young rats showed a much better growth than the controls. They call attention to the favorable influence of cod liver oil on nursing mothers and state that several hundred observations have shown that in women who during the last months of gestation had been given additional quantities of vitamin A, the incidence of febrile complications is four times as small as in other women.

Zeitschrift für Tuberkulose, Leipzig

68 225 304 (Sept.) 1933

Investigations on Ultraviolet Ray Susceptibility of Patients with Pulmonary Tuberculosis. H. Thiem—p. 225

Medicinal Treatment of Tuberculosis of Larynx. W. Schoene—p. 242

*Fermented Tuberculin. Focal Hyperemia and Not Focal Reaction. A. Komis—p. 246

Oxygen Reducing Potential of Several Tubercle Bacilli Strains in Relation to Their Virulence. M. I. Aksimenov—p. 249

Newer Medicaments and Nutritional Substances for Treatment of Tuberculosis. G. Schröder—p. 253

Fermented Tuberculin—Komis shows that fermented tuberculin does not "whip" the focus as does ordinary, not fermented tuberculin. Fermented tuberculin produces a hyperemia at the focus and around it. This hyperemia promotes the cicatrization of the focus and has a favorable influence on the further course of the disease. The author paid particular attention to the hemoptyses that occur during treatment with tuberculin. He compared those occurring after the use of ordinary tuberculin with those following treatment with fermented tuberculin. He found that fermented tuberculin does not produce profuse or sudden hemoptyses, even when the injections are repeated, as is the case if ordinary tuberculin is used. The hemoptyses were not noticeably increased but their duration was somewhat extended. On the basis of this he maintains that the process is not a true focal reaction but rather a focal hyperemia.

Zentralblatt für Gynäkologie, Leipzig

57 2225 2288 (Sept. 23) 1933

Blood Serum of Healthy Pregnant Women Against Abortion. H. Sellheim—p. 2226

*Thyroid Activation by Serum from Pregnant Women and by Extracts from Their Urine. F. Schenk—p. 2232

Anterior Lobe of Hypophysis or Placenta? E. Philipp—p. 2237

Criticism of Knaus's Theory of Physiologic Sterility. A. Niedermeyer—p. 2241

Remarks on Draft of Czechoslovakian Law Regarding Induced Abortion. B. Wachsberger—p. 2244

Treatment of Severe Uterine Hemorrhages by Means of Zinc Chloride Pencils. R. Vorster—p. 2246

Pubertas Praecox and Full Term Pregnancy in Girl, Aged 6. P. C. Chaschinsky and S. I. Jerschow—p. 2252

Thyroid Activation by Serum from Pregnant Women—A review of the literature convinced Schenk that the statements about the thyrotropic action of extracts from the urine of pregnant women differ widely, while the reports about extracts of the anterior lobe of the hypophysis correspond, the latter having been proved activating in all experiments. The contradictory reports about the extracts of urine induced the author to test a number of these substances and he obtained positive results with prolan, prehormone and several other

extracts, while other investigators had obtained opposite results with prolan and prehormone. He points out that the contradictory results may be due to the fact that the examiners have disregarded certain prerequisites of the test. He emphasizes that during the tests the guinea-pigs must receive a diet that puts the thyroid to rest. Moreover, the thyroids of female animals should be examined when estrus does not exist so as to exclude the activating influence of the anterior hypophysis during estrus. The author points out that the manner in which the extracts are prepared may have an influence on their thyrotropic action. He investigated the thyrotropic action of the serum of pregnant women and found that its subcutaneous injection into guinea-pigs produces a noticeable activation of the thyroid of the animals. For comparison he examined the thyroid of a pregnant guinea-pig and found it likewise activated.

Voprosy Pediatrii i Materinstva, Moscow

5 163 (No. 1) 1933 Partial Index

*Vaccination of the New Born and Nurslings According to Calmette. S. B. Adelberg, A. M. Bogoslovskaya and A. I. Savshinskiy—p. 5

*Value of Mantoux Reaction in Group Investigation of Children's Tuberculosis. Collectives. S. G. Rakhlina—p. 14

Suppurative Meningitis in Nurslings. A. D. Vaysberg—p. 20

Spirometry in Children with Cardiovascular Disease. E. P. Velitskiy—p. 39

Icterus Neonatorum. P. Ya. Mittelman—p. 42

Vaccination of Nurslings with BCG—Adelberg and his associates regard the Calmette method of vaccination one of the most powerful agents for combating tuberculosis. It is particularly indicated in children who are exposed to direct contact with tuberculous persons and in whom, according to their experience, vaccination lowers decisively the incidence of morbidity and mortality from tuberculosis. Isolation of children for a definite period before and after the vaccination was considered desirable, but the inability to carry it out on a large scale did not constitute a reason for denying it to infants and to older children. Clinical and roentgenologic studies of vaccinated children established that tuberculous manifestations among them were rare and that when present they ran a favorable course. Positive skin tuberculous reaction resulting from vaccination appeared on an average of four months after vaccination by mouth, and one and a half months after hypodermic vaccination. The authors urge vaccination of all infants living in contact with tuberculous persons.

Mantoux Reaction in Group Study of Children—Rakhlina reports her experience with the Mantoux skin test in the Tuberculosis Division of the Institute for Protection of Motherhood and Childhood. The histories of 335 children who gave a positive reaction were followed for a period from 1926 to 1930. The majority of the patients suffered from an active form of tuberculosis. Of these, 95 per cent gave a positive reaction after the first injection. Tuberculous infection can be ruled out in children who do not react to repeated injections in a dilution of 1:100. In the majority of instances the degree of reaction was indicative of the severity of the process. A severe reaction was obtained, as a rule, in mild processes and a weak reaction in grave forms. Children with exudative processes gave a severe reaction. Absence of anergy was rarely observed, usually a few days before death. Local reactions were most frequent in older children with a mild process. Febrile reactions were unusual and did not affect the general health. Evaluation of focal reaction is difficult and calls for much caution. The author concludes that the Mantoux test is a safe procedure and that it is more sensitive than the Pirquet test.

Hygiea, Stockholm

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New Case of Cleidocranial Dysostosis. T. Fredbarj—p. 647

*Silicosis in Workers at Metal Polishing and Remarks on Silicosis and Tuberculosis. Cases. J. Bellander—p. 655

Silicosis in Metal Polishers—Bellander concludes that danger of silicosis is present in metal polishing especially for workers with defects impairing the pulmonary circulation. The most important preventive measure is the exclusion of such workers from this occupation. While tuberculosis is a grave complication in silicosis, silicosis may have a certain therapeutic effect, possibly marked, on pulmonary tuberculosis, as a slight degree of silicosis probably hastens encapsulation with consequent healing of the tuberculosis or a long latent period.

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THE PRESENT STATUS OF IDIOPATHIC ULCERATIVE COLITIS

WITH ESPECIAL REFERENCE TO ETIOLOGY

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BALTIMORE

Any involvement, regional or general, of the large intestine above the lower part of the rectum resulting in a sanguineous, a mucosanguineous, a mucopurulent or a mucopurulent-sanguineous exudate, with or without diarrhea, due to known or unknown factors, save that of a neoplasm, is a colitis. Clinically the corollary follows that a colonic exudate or feces containing blood, mucus or pus, or all of them, is due to a colitis when neoplastic disease and perianal perirectal and localized disturbances of the hemorrhoidal area are eliminated as causes.

This communication concerns itself with a form of colitis known as idiopathic, primary, nonspecific, ulcerative chronic ulcerative, hemorrhagic or suppurative colitis colitis gravis ulcerosa or ulcerose.

ETIOLOGIC CONSIDERATIONS

General Prevalence—This syndrome is not restricted to age, sex, season or zone. The greatest number of cases fall within the second, third and fourth decades.

Epidemiology—Idiopathic ulcerative colitis possesses neither epidemic nor infective properties. Its lack of transmissibility is striking. The records of the Johns Hopkins Hospital do not reveal more than one case in a family.

Predisposing Factors So Called—Nothing definite is known in this connection. "Predisposing factors" so called, when associated with ulcerative colitis is a term used to denote the relative concomitance of initial symptoms and exacerbations with other factors. They have been designated as infections of the upper respiratory tract, epidemic diarrhea (in all likelihood bacillary dysentery), or diarrhea following the drinking of polluted water as well as amebic dysentery and so-called factors acting locally by reducing bowel resistance in the form of enemata and laxatives.¹ Similarly the

psychiatric aspects, probably because of the occurrence of ulcerative colitis in some young men and women of psychoneurotic or emotionally unstable tendencies, have come into consideration of late.²

It is my belief that, when some powerful systemic or other agent, as noted, is called in aid or is regarded as of etiologic significance, the intestinal flora or a so-called specific organism cannot be regarded as either a sole or a primary cause of the lesion seen in ulcerative colitis.

Parasitology—The very definition of the syndrome of idiopathic ulcerative colitis precludes the presence of pathogenic parasites. Yet the simultaneous appearance of amebic dysentery and ulcerative colitis has been claimed to occur as distinct entities in some cases by virtue of the concomitant occurrence of three conditions: (1) the isolation of *Endamoeba histolytica*, (2) the feeling that the etiology of ulcerative colitis has been ascertained, and (3) the presence of types of ulceration seen by rectosigmoidoscopy, said to be characteristic for each of these conditions. That these two disturbances may occur simultaneously does not involve the acceptance of the interpretation that has been given, for these reasons. First, the specific etiologic factor in ulcerative colitis—as will be indicated—remains undetermined. Second, rectosigmoidoscopic observations described as characteristic of this disorder are to others,³ including myself, indistinguishable from chronic bacillary dysentery. In consequence, it would seem to be in error to deviate from the accepted teaching, namely that the infection by *E. histolytica* be regarded as primary and the involvement of ulcerative colitis as secondary. Incidentally, those cases in which after adequate treatment the parasite disappears but the colitis persists fall, in my opinion, within this group. This conservative attitude, it is felt, should likewise apply in the conceivable possibility of the engrafting of an amebic dysentery on a preexisting ulcerative colitis when it is impossible for the clinician as it must be in practically all such instances, to determine the priority of disorder. If Craig's complement fixation test for amebiasis should prove to be significant some cases diagnosed as primary ulcerative colitis are those of amebic dysentery or secondary to that disease. This phase of the problem has been brought forth recently by Kiefer.⁴

The presence of other amebas in ulcerative colitis is not particularly significant, since they are not disease

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Owing to lack of space this article has been abbreviated in THE JOURNAL principally by the omission of general anatomic physiologic and clinical consideration. The complete article appears in the author's reprint.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fourth Annual Session of the American Medical Association Milwaukee, June 14, 1933 and the Greater Boston Medical Society, Boston, Oct. 3, 1934.

¹ Larson, J. W. Predisposing Factors in the Etiology of Chronic Ulcerative Colitis. Proc. Staff Meet. Mayo Clin. 6: 241-244 (April 22) 1931.

² Murray, C. D. Psychogenic Factors in the Etiology of Ulcerative Colitis and Bloody Diarrhea. Am. J. M. Sc. 180: 219-2-8 (Aug.) 1930. Sullivan, A. J. and Chandler, C. A. Ulcerative Colitis of Psychogenic Origin. Yale J. Biol. & Med. 4: 789-90 (July) 1932.

³ (a) Hurst, A. F. Discussion on Diagnosis and Treatment of Colitis. Proc. Roy. Soc. Med. (Sect. Med.) 20: 14 (1927). Discussion on Colitis. ibid. (Sect. Surg.) 16: 106-108 (1922-1923). Discussion on Colitis. ibid. 24: 784-9 (1931). (b) Herr, J. B. Ulcerative Colitis. Guy's Hosp. Rep. 81: 322-373 (1931).

⁴ Kiefer, F. D. The Craig Complement Fixation Test for Amebiasis in Chronic Ulcerative Colitis. Am. J. M. Sc. 183: 624-631 (May) 1932.

producing This is true, too, of the flagellates—even though medical literature sometimes may lead one to believe to the contrary—for parasitologists have deduced no satisfactory scientific evidence of pathogenicity There are data to show that *Balantidium coli*—the ciliate—may produce an ulcerative colitis,⁵ but it is not the type with which we are concerned here

Bacteriology—A Uncommon Bacterial Types *B. proteus*, *B. pyocyaneus*, *B. lactis-aerogenes* and *B. mucosus-capsulatus* have been incriminated as etiologic agents in chronic ulcerative colitis.⁶ Actually, no satisfactory evidence has been adduced that any of these organisms bear any essential relation to this condition.^{6a} *B. paratyphosus B* has been isolated on occasion from intestinal lesions in some cases of ulcerative colitis and has therefore been regarded in those instances as a significant factor in etiology

B. Anaerobes There appears in the literature no satisfactory direct evidence for the belief that *B. welchii* is of etiologic significance in ulcerative colitis Felsen's⁸ report of satisfactory clinical responses by intestinal oxygenation does not prove the importance of this bacterium in the etiology of this condition, for he himself suggests that the effect of such therapy may be on intestinal tissue proper Contrarywise, in my studies on ulcerative colitis I have been impressed with the relative fewness of *B. welchii* generally encountered on anaerobic deep blood agar plates made directly from the material of these cases Also, I⁹ have found, in vitro, that fresh noncoagulable blood in normal as well as from ulcerative colitis cases has a deleterious effect on *B. welchii* This might explain why this organism is not found in large numbers and therefore is at present not to be regarded as the cause of the condition

C Virulence Ascribed to Normal Bacterial Inhabitants of the Colon There are some observers who present the idea that, for some unexplainable reason, the local tissue resistance of the colon becomes lowered, and organisms that are habitual saprophytes take on an added virulence and become pathogenic This has been well expressed by Dr T R Brown,¹⁰ chief of the Gastro-Intestinal Clinic at Johns Hopkins Hospital, in the following manner

Is it not possible that the cause of the disease is to be found not in the presence of a definite and specific infective agent, but rather in the absence of some protective substance or mechanism or of something which normally inhibits the bacterial invasion of the intestinal wall, perhaps due to metabolic error, or endocrine disturbance or lack of a specific bacteriophage, or absence of some normal bactericidal substance in the intestinal mucosa?

D B. Coli There is no convincing experimental evidence on record that *B. coli* is of primary significance in the etiology of the process I⁹ have recently deduced suggestive confirmation of this view From experiments in vitro in undiluted blood and in saline-blood dilutions from both normal and ulcerative colitis

cases, this organism is destroyed and its growth inhibited, respectively

E B. Dysenteriae The view that chronic ulcerative colitis is an aberrant form of bacillary dysentery persists in England,³ on the continent,¹¹ in Canada¹ and, possibly to a lesser extent, in this country Ulcerative colitis appears to differ from bacillary dysentery in four particulars First, ulcerative colitis is not known to present the abrupt, brief attack of the ordinary case of bacillary dysentery Second, the age incidences are dissimilar Third, ulcerative colitis is not infective Fourth, in ulcerative colitis, *B. dysenteriae* is not encountered

The first two difficulties are explained principally by Hurst and his co-workers by the hypothesis that ulcerative colitis is a modified form of bacillary dysentery Actually, this may or may not be so, or the contention may be true only of a group of cases which may have begun as bacillary dysentery but which, when investigated, are diagnosed as idiopathic ulcerative colitis because of negative bacteriologic, parasitologic and serologic observations As to the third objection, while ulcerative colitis is noninfective in that almost never are two cases found in the same household, recurring or chronic bacillary dysentery with which it is comparable is regarded in many quarters as being noninfective, too, especially when the offending organism, rarely isolated in this condition, is not to be encountered Fourthly, the bacteriology and serology of ulcerative colitis and that of recurring bacillary dysentery are not as dissimilar as would appear at first glance In ulcerative colitis, *B. dysenteriae* is not to be found In chronic bacillary dysentery these organisms are rarely to be encountered, their paucity, when discovered, and the severity of the disease are such that the causal relationship of these bacteria to the lesion of chronic dysentery is somewhat incredible In ulcerative colitis, the serum agglutination reactions with *B. dysenteriae* are negative, in a majority of definitely established subacute and chronic bacillary dysenteries, Douglas, Colebrook and Morgan¹³ have shown that the serum agglutination reactions are of no diagnostic import Some authorities deny the occurrence of agglutination altogether^{3b} De Lavergne and others¹⁴ demonstrated in Flexner dysentery a relationship between the diminution of agglutination properties and the increase of time elapsing between the onset of the attack and the performing of the agglutination test Incidentally, here it is to be observed that many cases finally diagnosed as chronic ulcerative colitis are studied intensively for the first time years after the initial attack Thus, it is possible that the differences between chronic ulcerative colitis and chronic bacillary dysentery may be quantitative and not qualitative, at least in some cases

Recently, I⁹ learned that in undiluted and in dilutions of noncoagulable human blood (1 cc of blood to 3 cc of saline solution) in normal and bacillary dysentery cases, *B. dysenteriae* Shiga and Flexner failed to survive on incubation at 37 C, in bouillon controls they grew abundantly The experiments suggested that the

5 Boeck, W C Intestinal Flagellates and Ciliates of Man in Oxford Medicine 1932 chapter XLII pp 1040 1043

6 Jex Blake A J and Higgs F W Statistics of Ulcerative Colitis, Proc Roy Soc Med (Sect Med) 2 119 124 1908 1909

6a It was learned later⁹ that *B. mucosus capsulatus* and *B. pyocyaneus* thrive in undiluted blood this may indicate a possible relationship

7 Whitehead R and Fairbrother R W B Paratyphosum Infection with Intestinal Lesions Restricted to Colon Report of Case J Path & Bact 35 974 975 (Nov) 1932 Dawson B and Whittington T H Paratyphoid Fever A Study of Fatal Cases Quart J Med 9 98 (Jan) 1916

8 Felsen Joseph Intestinal Oxygenation in Idiopathic Ulcerative Colitis Arch Int Med 48 786 792 (Nov) 1931

9 Paulson Moses The Effect in Vitro of Noncoagulable Human Blood on the Intestinal Bacteria of Man and Its Possible Relationship to the Etiology of the Dysenteries Particularly That of Chronic Ulcerative Colitis Tr Am Gastro Enterol A 1933 to be published

10 Brown T R Chronic Ulcerative Colitis Ann Clin Med 4 425 429 (Nov) 1925

11 Zweig Walter Repetitorium der Darmkrankheiten Deutsche med Wchnsch 55 918 919 (May 31) 1929

12 Thorlakson P H T Ulcerative Colitis Canad M A J 19 656 659 (Dec) 1928 Tr Am Proct A 1929 pp 100 120

13 Douglas S R Colebrook L and Morgan W P Report upon Investigations in the United Kingdom of Dysentery Cases Received from the Eastern Mediterranean IV Report upon Combined Clinical and Bacteriological Studies of Dysentery Cases from the Mediterranean Medical Research Committee Special Report series 6 1917 p 75

14 de Lavergne V Melnotte P, and Debenedette R Sur la sero-agglutination dans la dysenterie a bacille de Flexner Compt rend Soc de biol 103 1251 1252 (May 1) 1930

continued presence of fresh blood in the intestine might explain, in a measure, the inability to isolate these organisms from many with chronic bacillary dysentery and in some other patients, who in consequence of this as well as of negative parasitologic and agglutination studies are classified as having chronic ulcerative colitis.

Ulcerative colitis and recurring or chronic bacillary dysentery are thought by many to be identical in these respects. The clinical course of the two conditions is indistinguishable. Pathologically, the appearances of the large intestine in bacillary dysentery and ulcerative colitis are not to be differentiated. Chronic bacillary dysentery, like chronic ulcerative colitis, usually involves the distal portions of the large bowel, in exceptional instances in both conditions the lesions appear to be restricted to the more proximal segments.¹⁰ In acute bacillary dysentery, as in ulcerative colitis, the process attacks the mucosa with early rectal involvement.¹⁰ In more than fifty cases of definite acute, subacute and chronic bacillary dysentery in infancy and childhood in which I have performed rectosigmoidoscopy, no normal rectums or sigmoids were seen. In most instances the appearances to me were identical with the appearance of ulcerative colitis. Other observers have reported similarly.³ Roentgenograms in both conditions often are not unlike one another. Even many of the complications observed as occurring in ulcerative colitis, such as fibrosis, strictures, polypi, perforation, joint changes, and transient paralyses sometimes involving muscular atrophy, are noted by MacCallum¹⁰ as complications of bacillary dysentery. Buie,¹⁷ who wrote that the rectum and lower sigmoid were characteristic in chronic ulcerative colitis, now states, in speaking of the pathology of this condition, "I am willing to concede that this picture is variable enough to keep me somewhat in doubt as to its various manifestations."

Thorlakson¹² reports that Cadham, by a special technic, from the wards of the Winnipeg General Hospital, in nine isolated instances usually designated as ulcerative colitis, has found *B. dysenteriae* in one fulminating, two subacute and three chronic cases.

From the foregoing data, it appears that ulcerative colitis meets the requirements of a syndrome rather than of an entity. It is a set of symptoms and the sum of signs of a morbid state, the etiology of which is either unknown or, like bronchial asthma, variable. Its clinical course, with its pathologic manifestations, complications and sequelae, are indistinguishable from chronic bacillary dysentery, thus rendering its characteristics not specific for idiopathic ulcerative colitis.

The correlation of idiopathic ulcerative colitis and bacillary dysentery is not to be interpreted as my belief that the etiology of the latter is that of the former. The specific cause of ulcerative colitis remains undetermined and it is my impression that not the same etiologic factor is operative in every case, so that *B. dysenteriae* may have been the primary agents in some cases in which bacteriologic, serologic and parasitologic examinations are negative. The dissimilarities in these two conditions, however slight, do not seem explainable clinically in all cases of idiopathic ulcerative colitis on the basis of its being an aberrant form of bacillary dysentery.

F The Vitamin Theory. Avitaminosis as a cause of ulcerative colitis is not supported by clinical experience. However, experimentally, striking chronic lesions resembling this condition in man, macroscopically and microscopically, have been those produced in animals by the feeding of vitamin deficient diets.¹⁸

G Focal Infection. Here, too, as in many conditions in which the cause is unknown, focal infection has been thought to be of etiologic importance. The relationship remains to be proved both experimentally and clinically. Experimentally, Cook's¹⁹ researches appear inadequate because of the use of primary cultures which may or may not have been pure and the absence of control animal studies with streptococci and other organisms from foci of other types of hemorrhagic or ulcerative colitides. Still other studies²⁰ have been done with mixed cultures and cultures made from tooth and tonsillar foci, the determination of the sole presence of a specific streptococcus being made by morphology alone, a method regarded as unreliable, as will be indicated later. Clinically, there is no evidence of dissemination from a focus to a distant involvement, by a toxin, by positive blood cultures or by associated conditions, as arthritis in which the streptococci found are said to be different from the streptococci in ulcerative colitis.¹ Positive blood cultures are of no significance because of their rarity in spite of the ready access to the blood stream by intestinal organisms because of ulceration.

Obviously, eradication of all sources of infection should be undertaken. However, I have seen no instance in which striking amelioration could be attributed solely to such elimination. Relief thought to be so obtained often may be purely coincidental because of the self limited tendency of the acute phases or possibly of some influence of other associated forms of therapy.

H Vagotonia. Its exact role remains to be determined. Eppinger and Hess²¹ state that "these diarrheas rarely last longer than twenty-four hours." When they do, it is a suggestion that what was purely functional has become an inflammatory disease of the mucosa.

I Calcium Metabolism. Disorders of calcium metabolism with possible tetanic manifestations and changes in capillary permeability, more marked in the intestine have been said to be of some influence in this condition.²²

J Cocci. Diplococci, Pneumococci, Enterococci, Streptococci. A diplococcus may be a pneumococcus, an enterococcus or one of many varieties of streptococci. When observed as young cultures in liquid mediums, when smeared from solid mediums or from material secured directly from the bowel, these organisms—even those streptococci which in older liquid cultures or in subcultures may present characteristic chains—appear as diplococci. Occasionally diplobacilli, diphtheroids, staphylococci and small, plump gram-positive bacilli on direct smear, as well as from early

15 Rogers Leonard. *Bowel Diseases in the Tropics*. 1921. Oxford Medical Publications. London: Henry Trowde and Hodder & Stoughton. pp. 402-412.

16 MacCallum W. G. *Dysentery, Infections in a Text Book of Pathology*, ed. 5. Philadelphia: W. B. Saunders Company, 1932. pp. 590-594.

17 Buie L. A. Discussion on Ulcerative Colitis. *Trans. Am. Proct. A.* 1929. p. 112.

18 McCarrison Robert. *Studies in Deficiency Disease*. London: Henry Trowde and Hodder & Stoughton, 1921. Faulty Food in Relation to Gastrointestinal Disorder. *J. A. M. A.* 78: 1-3 (Jan. 7) 1922. Tilden E. B. and Miller E. G. Jr. The Response of the Monkey to With-Drawal of Vitamin A from the Diet. *J. Nutrition* 3: 121-140 (Sept.) 1930.

19 Cook T. J. Focal Infection of the Teeth and Elective Localization in the Experimental Production of Ulcerative Colitis. *J. A. Dent. A.* 18: 2290-2301, 1931.

20 Barger J. A. and Logan A. H. The Etiology of Chronic Ulcerative Colitis. Experimental Studies with Suggestions for a More Rational Form of Treatment. *Arch. Int. Med.* 26: 818-829 (Dec.) 1925.

21 Eppinger Han and Hess Leo. *Vagotonia*, ed. 2. New York: Nervous and Mental Disease Publishing Company, 1917.

22 Haskell Benjamin and Cantarow Abraham. Calcium and Parathyroid Therapy in Chronic Ulcerative Colitis. *Am. J. M. Sc.* 181: 18-0 (Feb.) 1931.

cultures in liquid mediums, especially when the cultures are mixed, may be indistinguishable from diplococci. Obviously, then, a diplococcus is not distinctive, morphology is not characteristic, it is merely descriptive. The use of terms such as "diplococcus" and "diplostreptococcus" to designate a specific organism is therefore in error, for they denote characteristics common to several types of intestinal streptococci. The attempt, then, to diagnose the presence of any one or more of these organisms on the basis of morphology alone—in smear and culture of intestinal material or in intestinal tissue—is plainly a futile task, as shown in the accompanying illustration. Yet there is published evidence of such occurrences, as will be noted, on which definite deductions have been based with respect to the etiology of ulcerative colitis.

For instance, pneumococci have been said to be etiologically responsible for ulcerative colitis, apparently because diplococcal forms present in feces resembled them morphologically. There is no instance or record in which the reported presence of this organism has been substantiated by adequate identification. Also, Bergen, working under Rosenow and with Rosenow's methods, in presenting, in 1924 and 1925, experimental data on which his entire hypothesis is founded, namely, that a gram-positive diplococcus is the cause of ulcerative colitis, reported seventy-five strains as isolated with only twenty-five studied culturally. In 1927



Examples of nondistinctiveness of the diplococcal arrangement of a variety of strains from ulcerative colitis in Rosenow's dextrose brain broth: A alpha-zoned streptococcus; B alpha-zoned enterococcus; C beta-hemolytic streptococcus; D gamma-zoned (non-hemolytic) streptococcus; E Welch bacilli; F, mixed culture of all the foregoing strains.

the organism was reported²³ as isolated in 189 of 266 cases, 105 of which were determined culturally. Here, eighty-four strains seem to have been established purely on the basis of morphology. This method of diagnosis is regarded by many bacteriologists as inaccurate, misleading and untenable for reasons just noted.

In 1924 and 1925, the so-called diplococcus was reported by Bergen²⁰ as that of an alpha-zoned (J. H. Brown classification) bacterium, which "never ferments inulin or mannite."²⁴ In 1927, Bergen²³ added that of "105 strains tested, 41 fermented mannite and 64

did not." In 1930 he²⁵ reported that the diplococcus "does not usually ferment mannite but lacks the power to ferment inulin."

The first requirement in the establishing of a particular organism as being "etiologically significant" in ulcerative colitis or in any other disease is that the criteria for its identification as set down by its proponent be constant, at least in his own hands. Obviously, this has not been the case. That cocci morphologically identical but culturally different—more than one type of coccus—have been dealt with, a contention that I²⁶ have maintained for years, is evidenced by these changes in characteristics originally given as constant and as differentiating them from similar organisms. On the other hand, there is no proof that these alterations, encountered presumably under identical conditions, are variations of the same bacterium.

Organisms presenting these characteristics have been isolated by me from normal human feces by a technique described elsewhere, from ulcerative colitis and in rarely encountered acute and subacute amebic dysentery cases. The presence of such bacteria in chronic bacillary dysentery is now being investigated.

Thus, intestinal lesions produced in animals by the intravenous injection of more than one type of streptococcus, as well as similar but more marked lesions secured on the administration of mixed cultures, obviously cannot be accepted as experimental proof of the specificity or of the significance of a definite organism in the etiology of this condition. Incidentally, etiologic specificity itself has been urged by attempted descriptions of a particular organism, the desire to establish the condition as an entity, and especially by the use of such terms as "definite causative microorganism," "specific vaccine" and "specific serum."

Inadequate control studies, as has been pointed out in detail elsewhere,²⁸ in addition to the absence of essential control data, as the isolation and the response of laboratory animals on administration of streptococci and other organisms from other types of ulcerating or hemorrhagic colitides, is a further bar to the acceptance of such contentions. Suffice it to say that a perusal of the literature does not indicate a single study, adequately controlled, confirming a specific organism as the cause of this condition, nor am I able to determine from such sources which streptococcus can be regarded as of etiologic or secondary significance, since the criteria have varied from time to time, indicating a variety of streptococci involved.

In thirteen of fourteen cases of acute exacerbations of chronic ulcerative colitis, I²⁷ isolated ten types of streptococci, including the "diplococcus" meeting Bergen's original criteria. No one type was found to be present in more than three cases, the so-called diplococcus being isolated in two cases, in one of which it predominated. Five of seven varieties of alpha-zoned streptococci intravenously injected into rabbits, including the organism originally referred to by Bergen, produced lesions, confirmed by microscopic sections, primarily in the lower colons and rectums of 45.5 per cent of the animals. A rectal and a colonic involve-

²³ Bergen J. A. Chronic Ulcerative Colitis. Bacteriologic Studies and Specific Therapy. Tr. Am. Proct. A. 1927, pp. 93-99.
²⁴ Bergen J. A. The Treatment of Chronic Ulcerative Colitis Based on the Demonstration of a Definite Causative Microorganism. J. Iowa M. Soc. 16: 218-221 (May) 1926.

²⁵ Bergen J. A. Chronic Ulcerative Colitis. Arch. Int. Med. 45: 559-572 (April) 1930.
²⁶ Paulson Moses. Chronic Ulcerative Colitis with Reference to a Bacterial Etiology. A Survey in Nelson's Loose Leaf Living Medicine May 1929, pp. 349-360. Nelson's Loose Leaf Living Medicine, April 1929, pp. 149-160. Brown T. R. and Paulson Moses. Chronic Ulcerative Colitis. Internat. S. Digest 8: 67-85 (Aug.) 1929.
²⁷ Bergen J. A. Experimental Studies on the Etiology of Chronic Ulcerative Colitis. J. A. M. A. 83: 332-336 (Aug. 2) 1924. Paulson Moses. Chronic Ulcerative Colitis with Reference to a Bacterial Etiology. Experimental Studies. Arch. Int. Med. 41: 75-96 (Jan.) 1928.
²⁸ Paulson J. Brown and Paulson. Paulson.

ment was noted in one of six rabbits intravenously injected with the so-called diplococcus. A heated (killed) culture of a beta hemolytic streptococcus (foreign protein) isolated from the uterus of one with puerperal sepsis, *B. coli* from a normal human sigmoid and in a case of amebic dysentery, and *B. dysenteriae* Shiga and Fleisher produced lesions, confirmed by microscopic section similar in pathology and location to those just referred to in a large number of rabbits. In short, this research shows the variety of streptococci to be found in cases of ulcerative colitis and the production of lesions identical in pathologic changes and similar in location produced by several of them as well as by organisms from other sources. A subsequent study,²⁹ tending further to establish this nonspecificity of bacterial influences in the etiology of ulcerative colitis, showed another strain of streptococcus not previously encountered as producing lesions—proved by microscopic section—in the intestine of four of six animals. In addition, *B. lactis-aerogenes* and *B. coli* and foreign protein (sterile dextrose brain broth) produced diarrhea in some instances. Later, Buttiaux and Sevin³⁰ demonstrated that still another streptococcus isolated from ulcerative colitis produced colonic lesions in rabbits, which roentgenologically were similar to those sometimes seen in man with ulcerative colitis.

At this time it appears that of possible bacterial factors in the etiology of ulcerative colitis, streptococci and enterococci, normal inhabitants of the intestine, are the most significant as secondary phenomena, not by reason of animal experimentation, which, as noted, remains inconclusive, but because of the following:

1. Recent studies⁹ have shown that when fecal emulsions are grown in vitro in human noncoagulable blood in normal and ulcerative colitis cases, by a simple technique intended to stimulate continued bleeding, only streptococci and enterococci survive. In infusion bouillon controls, gram-negative bacilli predominate. Under identical conditions in diluted blood (1 cc of blood to 3 cc of saline solution) other organisms lived but not as numerous as in bouillon, resulting in a quantitative diminution of flora and a relative increase, when not absolute, of cocci because of the greater ability of the latter bacteria to live in blood than of the other intestinal bacteria, which are destroyed or inhibited by the bacteriocidal and bacteriostatic properties of this tissue.

From this research, the following deductions have been made. This diminution of flora noted in ulcerative colitis and in the few severe amebic dysentery cases seen in Baltimore, as well as the relative increase of cocci in many cases of the former (the bacteriology of amebic dysentery has not been studied in this connection), is due, in part if not completely, to the presence of blood which appears to act, generally speaking, less deleteriously on cocci than on other organisms of the intestinal flora. Thus the greater and more prolonged the intestinal bleeding, regardless of cause, the more marked changes of the nature described appear likely to occur. The presence of blood, then, favoring the growth of cocci normally present, may result in their becoming pathogenic and continuing the process,³¹ espe-

cially since Todd³² has demonstrated that the passage of streptococci through serum alone in many instances will reestablish virulence. It is thought also—in view of this research—that other organisms, normally present in the intestine, surviving in this abnormal medium, may assist to a lesser degree in carrying on the involvement. If the production of colonic lesions in animals by intestinal bacteria is of import, then further support for this belief is to be had in the fact that more profound lesions are to be encountered with mixed than with pure cultures.²⁷

2. Streptococci indistinguishable culturally from those described as being found in ulcerative colitis have been isolated from normal stools by Dukes³³ and by myself⁹ by the use of blood as a medium, the details of which are described elsewhere, in which streptococci multiply and other organisms are destroyed or inhibited. Pathogenicity, then, ascribed to such bacteria or any other organisms normally present, presupposes a preceding or primary factor responsible in some measure for this altered characteristic. Such normal presence precludes considering them in the same light as *Endamoeba histolytica* and the typhoid-paratyphoid-dysentery group not normally encountered, and primary causative agents of dysentery.

3. Streptococci in ulcerative colitis, in my experience, usually are not in actual predominance but may be relatively increased. If they were primary agents, an absolute increase on direct blood agar plates would be expected. Intricate cultivation methods and the difficulties in isolation, even with the use of a selective medium for streptococci, as Rosenow's dextrose brain broth, further indicate this lack of preponderance. Such predominance alone in Rosenow's dextrose brain broth is of no significance because it is a selective medium.

4. Logan's effort showing that "sterilizing the colon has not resulted in healing the ulceration" indicates the presence of other factors in the etiology of this condition.

PROGNOSIS

It has been the experience of the gastro-intestinal group at the Johns Hopkins Hospital that, if sufficient time is allowed, recurrences are virtually certain to occur in all but the exceptional cases. The possibility of permanent cure is remote in any type of true ulcerative colitis at the present writing. The acute fulminating severe cases present a high mortality regardless of the method of treatment. However, it is surprising how long some patients can live even when local and general symptoms are marked.

TREATMENT

Idiopathic ulcerative colitis primarily is a medical problem, every case first should have the benefit of thorough medical treatment. While most of the milder cases, in my hands, are well controlled by dietetic and pharmacotherapeutic measures, usually without polyvalent vaccine or serum, the management of the severer ones is discouraging, in that apparent relief, regardless of the concomitant therapeutic agents used, is followed by relapse, if they are observed long enough.

Unfortunately there is no "specific" therapy in this disorder. Therapy, in this condition, to be regarded as specific—in the light of prevailing knowledge—

²⁹ Paulson, Moses. Data to be published presented in abstract on "Colitis" Symposium American Gastro-Enterological Association Atlantic City, N. J. May 5, 1930.

³⁰ Buttiaux, R. and Sevin, A. Sur l'etiology des colitis ulcereuses. Ann. Inst. Pasteur 47: 173-216 (Aug.) 1931.

³¹ Paulson, Moses. The Bacterial Flora and Hydrogen Ion Concentration of the Human Ileum. The Effect of Acidophilus Milk and Lactose and the Possible Relationship of Ileal Flora to Colitis. Bull. John Hopkins Hosp. 45: 315-350 (Nov.) 1929. Tr. Am. Gastro-Enterol. 1929, p. 235.

³² Todd, E. W. Observations on Virulence of Hemolytic Streptococci. Brit. J. Exper. Path. 8: 289-302 (Aug.) 1927.

³³ Dukes, C. Discussion on Colitis. Proc. Roy. Soc. Med. (Sect. Surg.) 24: 794-795, 1931.

should meet the following criteria. First, the product should be prepared from the causative organism, thus, as has been indicated at length, remains to be determined. Second, the response on its administration should be abrupt, marked, complete, without remissions or intermissions and recurrences, the facts are that the response, not unlike that to foreign protein therapy, is, when it occurs, relatively slow, and that permanent cessation, save possibly in an isolated instance, remains to be established. Third, the attainment of a "cure" should be susceptible of accomplishment only with the "specific" therapeutic agent and none other, yet other measures have been used simultaneously with such "specific" agents, while transfusions alone, as well as preparations other than those said to be specific, have accomplished, frequently, similar results.

Numerous observers have reported "good results" on the use of mixed autogenous vaccines and of those either of enterococci dysentery or colon bacilli.³⁴ Bergen,³⁴ who in 1927, on "specific" vaccine administration, reported markedly satisfactory responses in 153 of 200 cases (77.5 per cent), the majority of which presented severe manifestations of ulcerative colitis, stated in 1929 that specific serum so called was being used, since results with "specific vaccine" in severe cases were unsatisfactory.³⁵ Of seven patients receiving adequate amounts of this serum, two died and two were clinically well. Later,³⁶ twenty-four of fifty patients were reported as symptom free. However, rectosigmoidoscopy often reveals little objective improvement in many who appear well. In view of these facts, as well as of the knowledge of the self limitation of exacerbations and of the recurring characteristics of this condition, it will be necessary to wait at least five years before his later reported benefits with serum can be properly evaluated objectively as well as subjectively. Remissions have been known to occur on mere bed rest alone. Recently Kalk³⁷ reported startling relief on both the intramuscular and the intravenous injections of ordinary horse serum in some ulcerative colitis cases. Hurst, Crohn, Bell, Boehnke, and Korbsch and Gross (the last named state that they have reports of nine others showing similar experiences) have in recent years reported striking remissions or intermissions by the intravenous injection of polyvalent antidysenteric serums.³⁸ However, this has not been the experience of Tidy and Watson.³⁹ T. R. Brown and I have felt on occasion that in some cases there was more than a coincidental relationship between the administration of polyvalent antipneumococcus serum and the relief secured. Incidentally, it is believed that the serum made by Mulford-Sharp and Dohme for use in ulcerative colitis cases is a polyvalent streptococcus serum, since in our hands the organisms sent by Bergen and used by them in its preparation represent more than one distinct strain of streptococci.

Of late, transfusions alone⁴⁰ have been used with marked success in many cases, but already there have

been some recurrences. The marked improvement said to be noted roentgenologically on the administration of "specific" serum and vaccine has been reported when blood transfusions alone⁴⁰ or horse serum is used.⁴¹ Bacteriophage has been used in isolated cases⁴² and calcium and paratyphoid therapy have been reported as beneficial.⁴²

In short, the medical management consists of rest, psychotherapy, diet, drugs, vaccines, serums, irrigations and instillations (although irrigations and instillations are not recommended), all of which have been detailed in the articles to which references have been made here. In ulcerative colitis it is felt that any procedures offering the slightest possibility of relief may be justifiably used.

As for surgery, it is believed that ileostomy should be the operation of choice because it puts the colon to rest, and that it should take place somewhat earlier than is practiced, "before ulcerations have become too deep, the disease very extensive, general resistance lowered and metastatic involvement of other organs and tissues have brought about irreparable damage."⁴³

SUMMARY

1 Chronic ulcerative colitis is a syndrome, for it presents a fairly constant set of symptoms and signs possibly of variable but of no demonstrable specific etiology. It involves the large intestine, particularly its distal segments, and resembles chronic bacillary dysentery clinically, pathologically, roentgenologically, and in some respects bacteriologically and serologically. However, the exact relationship between B. dysenteriae and this condition must remain *sub judice*.

2 (a) Avitaminosis as a cause of ulcerative colitis is not supported by clinical experience, although the experimental evidence is striking.

(b) Vagotonia as well as disturbances of calcium metabolism, has been thought to play a role in etiology.

(c) There is neither satisfactory direct evidence nor properly controlled confirmatory studies establishing a specific or primary etiologic association between any bacterium and chronic ulcerative colitis.

(d) The definite connection between foci of infection and the etiology of this condition remains to be proved both experimentally and clinically.

(e) Experimental data indicate the nonspecificity of bacterial influences in this disorder.

(f) Recent work suggests that the greater and more prolonged the bleeding, regardless of cause, the greater will be the diminution of the flora and the more marked the relative increase in cocci. These cocci, and to a lesser extent the other surviving intestinal organisms normally present, probably are responsible for a secondary infection.

3 Recurrences at present are certain to occur in all but the exceptional cases. The possibility of permanent cure is remote.

4 There is no specific therapy, since the specific etiologic factor, if there is any, remains to be determined and the therapeutic response is not specific. Ileostomy is regarded as the operation of choice and should take place earlier than is practiced usually.

Medical Arts Building

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ABSTRACT OF DISCUSSION

DR SARA M JORDAN, Boston There are two aspects of ulcerative colitis which are worthy of further elaboration. First, it has an acute phase which suggests an acute infectious process for which I hope there is a definite, specific agent which can be treated and for which help may be hoped for from vaccines. Second, it has the phase of chronicity and of periodic remissions, which make me feel in sympathy with the suggestion offered by Dr Thomas Brown at the last meeting of the Gastro-Enterological Association, in Washington, when he asked the question: Is it not possible that there is no definite, specific organism responsible for this disease but that it is due to the absence of some defense mechanism or some defense organism which prevents the infection of the intestine by the normal inhabitants of the intestine? These two aspects of the disease make both of these theories a possibility. One of my associates, Dr Kiefer made a study of thirty or forty cases in which he has tested the blood of patients with ulcerative colitis and found in 74 per cent that the Craig test for *Endamoeba histolytica* was positive, and in many of these cases antiamebic treatment gave what was thought to be favorable results. In the treatment of this disease, therefore, the possibility is considered of an association of *Endamoeba histolytica*, and secondary ulcerative colitis, and I feel that it is sometimes well to use antiamebic treatment in ulcerative colitis. Dr Paulson mentioned that ileostomy must be done early enough. One must not operate too early. It is a very serious problem to decide when an ileostomy should be done. One must take into consideration not only the fact that ileostomy is an unpleasant condition but that it is a permanent condition. In my experience an ileostomy cannot be taken down. The colon does not regenerate. The acute septic symptoms are undoubtedly relieved and a patient who otherwise might die lives, but his colon does not heal. Therefore one has to be guided by good clinical judgment and perhaps also by a bit of good fortune in deciding which cases should have ileostomy and which should not.

DR FRANK SMITHIES, Chicago During the past decade attention has been called to four major types of colitis associated with ulcerative lesions: (1) the prevalence of amebic lesions, (2) the presence of chronic ulcerative colitis, "idiopathic or regional ulcerative colitis" (by Bagen), (3) tuberculous ulcerative colitis, and (4) the type of colitis emphasized by Crohn, in which one deals with definite infective processes localized at the terminal ileum and cecum. I have maintained that in "Bagen's syndrome" one is dealing with a fairly localized infectious ulcerative disease of the colon which infection is secondary to an infectious ailment somewhere else after the fashion perhaps, of widespread metastases occurring in malignant disease. I consider that chronic ulcerative colitis of Bagen's type is a local evidence of a systemic infection carried from somewhere else by lymph and by the venous blood streams. Study of early cases gives clues to the process of ulcer production: these early lesions exist as infectious thrombi of minute blood capillaries; in the secondary stage these coalesce as early, primary, multiple petechial lesions, and, in the third stage, systemic-borne infection of these areas occurs and ulcer production follows. It is the study of only well established instances of this localized infectious ulcerative colitis that accounts for the failure to appreciate the causative mechanism and to neglect consideration of the underlying vascular anomalies that readily facilitate local stagnation and the persistent presence of bacteria conveyed to the region from far distant foci. Such distant foci are about the head, the teeth, the endocardium, the biliary tract and probably the wall of the bowel itself (either primarily from stagnant bowel contents or blood and lymph borne). Therefore in addition to local treatment of the bowel lesions the proper therapy consists in the location and eradication of primary foci of infection, measures to combat the systemic damage caused by this infection and general supporting treatment. In my experience transfusions of whole blood freely given, have proved of greater value than specific vaccines or their derivatives.

DR FRANK H LAHEY, Boston I am prompted to say a few words about the surgical treatment of this lesion because it is a serious lesion and because often the question of life hangs on a narrow balance. There are a certain few things

that my associates and I have learned in approximately forty of these cases which are of value. One is that ileostomy must be of the transverse type rather than of a lateral type in order that the course of the fecal stream may be completely sidetracked. Next the decision must be made, if one is in doubt on the early side. We have definitely lost patients by delay. Finally, one must realize when these patients are operated on that this colon must be handled like a hot coal, because its walls harbor organisms. The vessels close to the mesentery are lined and filled with septic thrombi, which readily become septic emboli. Manipulation produces distant infection and local peritonitis, therefore, surgeons should realize that these patients should be operated on under local or spinal anesthesia. The ileum should be hooked up, pulled out, implanted and cut across, and the less done, the better. In a majority of these cases ileostomy does not cure ulcerative colitis. When they reach the stage in which an ileostomy is needed, multiple destructive lesions in the colon have left strictures, fibroses and narrowing, and in many of the cases even after a temporary relief from ileostomy there has been a discharge of blood and pus that we have succeeded in curing ultimately only by colectomy. When these patients have a return of symptoms after an ileostomy, they can be relieved of these symptoms by complete colectomy in stages.

DR M H STREICHER, Chicago The one point I agree on with Dr Paulson is that there is no specificity in any organism. I agree with Dr Buie and Dr Bagen that there are definitely four stages which one can differentiate. If one sees enough material one will differentiate the various stages without difficulty. Since 1926 I have observed 220 cases. The diplostreptococcus of Bagen is not specific but is of primary importance. I have had vaccines made of several types and in the cases in which the Bagen diplostreptococcus was left out the patients did not get along as well. That is the best criterion that I have. The vaccine that I have made up is a mixed polyvalent bacterial vaccine. This is the best that can be done at the present time. This vaccine includes the Bagen diplostreptococcus in addition to other bacteria. I want to refer to what Dr Lahey and Dr Jordan said about surgery. In all the operative cases that I have seen, including the three colostomies that I have done, I have nothing but criticism to offer. Surgery in ulcerative colitis is cruelty.

DR JOHN L JELKS, Memphis, Tenn. This is interesting to a man who looks into one or more colons every day. He hasn't found any of these diplococci of Bagen. He has seen a good many cases so diagnosed. He has treated cases that had been treated for the Bagen bacillus for a year. The colons were badly ulcerated and filled with *Amoeba histolytica*. He has seen cases treated thus that presented suppurative tonsils sinuses filled with pus, and pyorrhea. In the chapter on protozoa in man in Sajous's *Cyclopedia of Practice of Medicine*, I am referring to the fact that I am finding some important factors in productivity in these cases. I am referring to *Spirillae* and recommending that oral sepsis and accessory sinuses should never be omitted, whether the case is amebic or not amebic. There are many streptococcal colitis cases which have not been so diagnosed but were called chronic ulcerative colitis, spastic colitis, spastic diarrhea, or mucous diarrhea. In the treatment of these cases it has been well said that one should be careful not to operate too soon as well as to do it soon enough. I prefer the transduodenal irrigation in these cases, with a proper diet and proper colonic irrigations.

DR L A BUIE, Rochester, Minn. Some of the statements that have been made here have been erroneous and I feel that it is necessary for me to defend one of the most valuable forms of treatment in the care of patients with ulcerative colitis. It is specific chronic, amebic bacillary or what not. My experience has been that the treatment with serum prepared from the Bagen organism has been curing patients. The records of those patients are far better than the records of patients treated years ago by the medical management referred to by those who are still in doubt. When patients are in desperate condition with a destructive disease cannot former experience with an inferior method be accepted as a control to determine that a later method is superior even if such a procedure might not be accepted in a laboratory as a controlled experiment. In this day of enlightenment are we to take patient A and treat him

with a curative serum, and patient B and treat him with something that we know is not going to cure him, in order to satisfy the requirement of some skeptics for control experiments? Is that being done in the practice of medicine today? I am glad that it is not necessary to rely on the bacteriologist for a diagnosis of chronic ulcerative colitis. I am profoundly grateful for the good old fashioned doctor who can call ulcerative colitis a disease instead of a syndrome.

DR. MORRIS PAULSON, Baltimore. Every statement that I have made here today is based on clinical experience and research as well as on the work of others to which references have been made in the paper. Etiology and therapy should not be confounded clinically. In most disorders they present separate clinical problems. For instance, in duodenal ulcer little or nothing is known of its cause, yet management in the majority of cases by any one of several means is regarded as rather satisfactory. The converse also is true: the cause of a condition may be generally agreed on, yet treatment may be of no avail, as in bacterial endocarditis. In ulcerative colitis no deductions with respect to a specific etiology can be drawn on the basis of reported promising responses by therapeutic agents said to contain a specific etiologic factor, for the reasons already outlined in this paper, particularly under the heading of therapy. As far as the reported successful treatment of ulcerative colitis at Rochester is concerned it is my impression that it is due more to what is known as the successful application of the art of medicine rather than to any particular therapeutic procedure.

ORIGINAL FEATURES OF ARTHROPLASTY OF THE HIP AND KNEE

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With regard to the wisdom of mobilizing ankylosed hips, one finds considerable difference of opinion among the best of surgeons. Henderson, reviewing the end-results of arthroplasties of the jaw, elbow, knee and hip, found those for the hip the poorest. Murphy, on the other hand, found that the hip gave him the best results. The problem is obviously more complicated in weight-bearing joints. The occupation and social

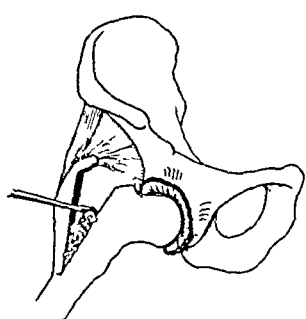


Fig. 1—Diagram illustrating erection of bone muscle lever at the hip to prevent dislocation and restore power of abduction and weight bearing.

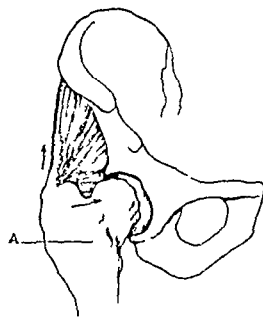


Fig. 2—Diagram showing result after healing with adequate trochanter leverage.

status of the patient, as well as his temperament, are often determining factors in deciding whether or not to operate. When the hip and knee on the same side are both ankylosed, the advantages of arthroplasty are much increased.

It must always be remembered that stability is very important in the hip, and, although the rotary nature

of the joint lends itself to arthroplasty, unfortunate results have followed arthroplasty when stability was not obtained.

Arthroplasty in cases of tuberculosis should be approached with a great deal of conservatism and only when the roentgenogram shows evidence of complete disappearance of all disease and a complete homogeneity of bone structure throughout the operative field.

Murphy in 1904 reported his technic for arthroplasty of the hip and in 1906 Hoffa¹ reported five arthro-



Fig. 3—Postoperative result of arthroplasty of hip previously arthrodosed for tuberculosis by two tibial grafts, stumps of which can be seen purposely left long to increase power of abduction and weight bearing.

plasties of the hip (three by Rochet and two by Nelaton²). From that time on, an increasing number are found in the literature. In fact, in my practice, arthroplasty has become so dependable and well regarded that whenever doing an operation to arthrodese a joint, if that case is a possible favorable case for future arthroplasty, I so plan my arthrodese operation as to make it possible for the future operation to mobilize. At the hip, tibial grafts are preferable because of their possible adequacy of length and strength, thus making it unnecessary to incorporate them in the joint itself. Too, I prefer to take bone elsewhere rather than to disturb unduly periarticular structures or surrounding muscles by obtaining the bone graft material locally. At the knee, for the same reason, I no longer employ the patella as a source of arthrodese material. After its diseased portion has been removed, the patella is left as intact as possible.

To be classed as a good result in the arthroplasty of the hip, there should be a minimum amount of voluntary flexion of at least 25 degrees. Everything being considered, a hip that possesses 25 degrees of painless active motion is far superior to a stiff hip. The joint must be painless and stable in weight bearing. Not only should the hip joint have motion to allow proper sitting but it should function in locomotion as well as in bearing the weight of the body. It is far better to have a stiff immobile hip than a usable one accompanied by weakness, and Baer goes on to say that "the more nearly the joint is similar in size and shape to the original joint the greater will be the stability. Hence arthroplasty is not a resection!" This statement may be true, but one frequently sees excellent functioning

hip joints when there has been an extensive destruction of bone and no semblance of a ball and socket joint remaining. The reason for this is that the muscle control is the all important consideration as to whether a hip is stable and whether there is a satisfactory amount of active motion and weight bearing.

To resolve the mechanics of the hip into simple terms, the hip joint itself is a fulcrum point situated at the end of a lever, namely, the neck of the femur, the distal end of which, or the great trochanter, is controlled by means of powerful muscles that are able, because of this mechanical setup, to pull the thigh into abduction, which is a most important feature of locomotion in that it has very materially to do with proper weight bearing. It is impossible for an individual to bear weight on a limb when the hip is mobile unless the muscle control is such that the limb can be held so that it will not swing into adduction. This is brought about by the mechanical action of the abductor muscles of the hip pulling on the distal end of the lever, namely, the neck of the femur.

If this statement, used as a premise, is true and if it is possible to maintain this muscular control, then the careful modeling with the head of the femur fully filling a deep new-made acetabulum with the difficulty of securing a free range of motion incidental thereto is not necessary or desirable. The deeper the new acetabulum is made with the corresponding femoral head, the greater the task of securing a good range of motion. Therefore, in selecting cases for arthroplasties of the hip, one should be sure that the muscles about the hip are reasonably preserved. Formerly it was my practice to rule out cases in which there had been extensive shortening of the neck of the femur, either from bone destruction or from a telescoping of the head and neck of the femur into the pelvis, for the



Fig 4—Range of flexion obtained in case shown in figure 3

reason that even if the abductor muscles were intact one could never expect satisfactory function of active abduction because the femoral neck lever would still be further shortened by the modeling of the new-formed hip at operation. This was fully realized in designing my reconstruction arthroplasty for ununited fractures of the hip with removal of the head of the femur and because of this the leverage action of the neck of the femur that was lost was restored by length-

ening the lever on the outer side of the long axis of the shaft of the femur by erecting, laterally and obliquely to the shaft, a bone muscle lever with the insertion of the hip abductors to its upper end undisturbed.

In this way one is able, even in the complete absence of the head and neck of the femur, with the denuded trochanter placed in the acetabulum, to establish a lever

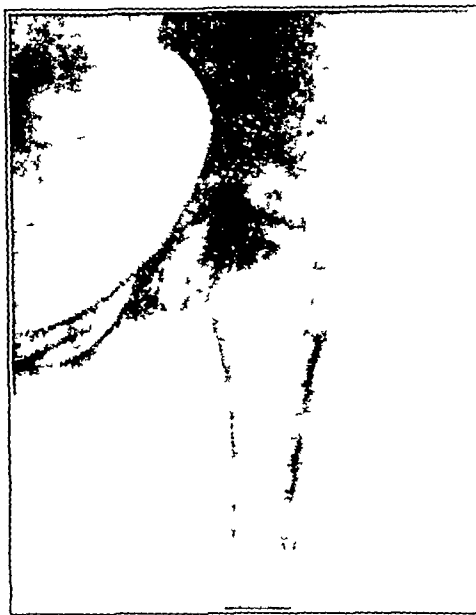


Fig 5—Result of erecting bone muscle lever

equally long and nearly as efficient as the normal neck of the femur, with the normal hip joint intact. Mechanical conditions brought about in this manner not only restore abduction with the weight-bearing function of the hip but also prevent dislocation, because as the limb approximates the midline the danger of dislocation where the acetabulum is shallow increases. It should also be realized that it is true that as the limb seeks the midline the erected bone graft lever, already described, travels farther and farther away from the rim of the acetabulum and the side of the pelvis and thus not only puts an increasing tension on the short abductor muscles but also on the surrounding fascial structures, thus holding the head of the femur in the acetabulum and preventing dislocation.

In recent years the destruction of the head and neck of the femur (with telescoping) has not been a deterrent influence to me in selecting such a case for arthroplasty, in that I have found in doing an arthroplasty that a hip joint could be modeled with the head of the femur much smaller than the acetabulum, with sufficient fascia and fat to fill in the interspaces, and that the mechanical influences brought about by the provision of leverage action for muscle control on the outer side of the trochanter not only prevented dislocation but allowed active abduction and satisfactory weight bearing.

TECHNIC

The patient should be placed on a fracture orthopedic table. The Sprengel-Smith-Petersen incision affords such satisfactory exposure that it is the incision of choice for all intra-articular operations, including arthroplasties of the hip. The incision begins at a point about 4 inches below the anterior-superior iliac

spine and is carried along the outer border of the sartorius muscle, upward to the anterior spine and thence backward, following the iliac crest. The gluteal muscles are detached and reflected subperiosteally from the wing of the ilium downward *en masse*, thus giving a wide exposure of the hip joint.

By means of a large carver's or Murphy's gouge, the femur is separated from the pelvis, care being taken to make the bone incision in such a way that a rounded femoral head and a corresponding acetabular cavity are shaped. The acetabulum is not shaped nearly as deep as it formerly was because of the fact that I find that my technic obviates the danger of dislocation, and I further find that this is a very satisfactory influence in bringing about a greater degree of ultimate motion. I have found the various carver's gouges and chisels of great service in my plastic bone work, especially in arthroplasties. The large variety of cutting edges and curvatures of the chisel or gouge shafts enables the surgeon to select the proper tool for almost any emergency.

After the general contours of the joint are thus blocked out, the surfaces are merely smoothed and transformed into regular convex and concave surfaces by means of my arthroplastic hip rasps. The smoothness of these joint surfaces is most important, and therefore the work should be done carefully. The concave and convex rasps are placed in between the femoral head and the acetabulum and these surfaces smoothed and shaped by a to-and-fro motion of the

handle in the manner of a spoke of a wheel. The tools will execute this work faster if an assistant pushes upward on the patient's knee. These instruments enable the surgeon to shape accurately the inner portion of the joint which cannot be seen or gotten at by any ordinary instrument.

The next step is to apply traction to the limb, to separate the head from the acetabulum, so that the bone particles can be washed out by means of a glass cannula connected with a fountain of saline solution over the table, and to allow the

easy insertion of the fascial flap, about to be obtained from the thigh, lower down. A semicircular skin incision is made on the outer side of the thigh, midway between the wound and the knee, and a quadrilateral piece of fascia lata with as much fat as is obtainable and about 4 inches long by $3\frac{1}{2}$ wide (in adults) is secured. The subcutaneous layer of fat is divided in equal halves—one half being left attached to the skin and the other half to the graft, which is subsequently to be removed. With a small curved needle, stay

sutures are placed in what are to be the two inner corners, and the fascial graft is drawn in and pushed into the inner confines of the new joint by some instrument as far as possible between the new joint surfaces. Additional sutures are then placed about the periphery of the graft. The fascia is carefully approximated by a continuous suture of number 1 chromic catgut.

If at this point it is thought that the leverage action of the neck of the femur is not sufficient, a bone frag-

ment, consisting of the tip and the outer surface of the trochanter of a varying length approximating 3 inches, is removed with the thin osteotome (figs 1 and 2), with the insertion of the abductor muscles intact, and swung outward from the shaft of the femur from 15 to 20 degrees, by producing a greenstick fracture at its lower end. Cancellous and fragments of cortical bone are then placed in the angulation between the remaining shaft of the femur and the bone fragment. The skin is closed by plain catgut number 0. Dressings and stickers to the thigh are applied. With the limb in moderate abduction, a plaster-of-paris spica is applied for three weeks, from above



Fig. 7—Postoperative result of arthroplasty of knee showing V shape of new formed joint for purposes of stabilization.

the opposite side to the toes, with stickers coming out through the plaster, above the ankle. From 15 to 20 pounds of traction with pulley and weight is maintained for three weeks after the removal of the plaster spica, or until a Taylor traction brace or Thomas knee-brace is applied, and locomotion with crutches is allowed.

This brace should be continued for at least three months before weight bearing is permitted, during which time daily massage and active and passive motion are carried out. Traction is most necessary and should be applied before the patient comes out from under the influence of the anesthetic, because of the devitalization and crushing effect that would otherwise be produced on the fascial graft by the involuntary contraction of the powerful thigh muscles. I have found that with a pulley and rope erected over the bed, fastened to a sling beneath the knee, the patient is able to help very materially in mobilizing the joint by pulling the hip into flexion (figs 3, 4 and 5).

ARTHROPLASTY AT THE KNEE

To the patient with bony ankylosis of the knee, a functioning joint with adequate mobility and stability is his object in seeking an arthroplastic operation, even more than at the hip. Whether or not the surgeon follows anatomic contours in modeling the new joint does not interest him, so long as the joint functions. It has been found by Allison and Brooks that it is absolutely impossible to duplicate experimentally, or in

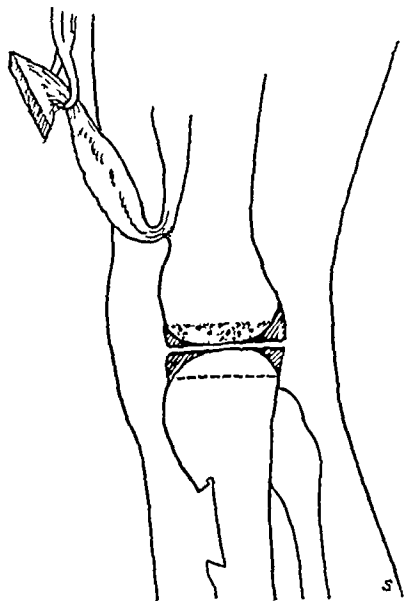


Fig. 6—Diagram showing author's approach by turning upward patella and attached tendons with tubercle of tibia. The patella and tendons are restored by sliding dovetailed block of bone into place from side.

surgically constructed joints at the knee, the normal gliding of the articular bone surfaces. This being true, and as attempts to approximate the contour of the normal joint are so often followed by lateral instability, consisting of lateral buckling due either to capsular laxity or to side slipping of one joint surface on the other because of irregular wearing of joint surfaces, in 1920 I devised a technic,³ based on well known mechanical principles, which ignores the normal contours of the joint and provides both mobility and stability. It has given excellent results.

In separating the tibia from the femur and in the bone modeling, wide V-shaped incisions replace the usual attempts to follow normal bony contours when viewed anteriorly. The convex wedge-shaped plane surfaces of the femur fit accurately into the concave wedge-shaped plane surfaces of the tibia. Weight bearing forces the apex of the wedge-shaped end of the femur so firmly into the tibia that the danger of lateral instability is practically eliminated, and a definitely improved prognosis is afforded.

Up to nine years ago, my own attitude concerning arthroplasty to produce mobility in bony ankylosed knees was one of great conservatism, both because of personal experience and because of observations which I had made on results of others. Either these patients had insufficient motion to satisfy them or, more often, the degree of mobility was satisfactory but lateral instability was present and proved so troublesome as to offset the advantages of mobility.

THE POSITION OF ANKYLOSIS

Extreme flexion is unfavorable to arthroplasty because it makes the technic very difficult and necessitates extensive removal of bone and the sacrifice of that portion of the tibia and femur which has the largest diameter, thus tending to produce lateral instability. If the knee is markedly flexed, it is advisable to perform a preliminary supracondylar osteotomy.

Five years ago I would have said that ankylosis in extension was best left alone but in view of the constantly improving results from arthroplasty I believe that the patient should be given the benefit of the latter unless there are definite contraindications.

The condition of neighboring joints should also be considered. If both knees are ankylosed, arthroplasty on one is definitely indicated, or, if the knee and hip on the same side are ankylosed, there should be slight reason for hesitation.

To women, the awkwardness of ankylosis is more annoying than to men and in young women ankylosis often proves a distinct handicap socially. For both men and women the nature of their profession or occupation will often determine how essential mobility of the knee is to them.

In few operations is the absolute cooperation of the patient so essential as in arthroplasty. However perfectly the technic may be executed a good functional result cannot be obtained unless the patient submits with patience, courage and intelligence to the long postoperative treatment which is likely to be slightly painful in the first stages and is always tedious. It is wise to test the patient's nervous stability by telling him this in advance and to let his reaction to such a statement be an indication for or against the operation.

All persons of weak will or of excessive nervous instability and those who have a litigation interest in

not getting better, such as certain compensation and accident cases, must be eliminated if the surgeon does not wish to risk unnecessary failures.

AGE AND SEX

Age and sex are not vital factors, although patients under 18 years are sometimes difficult to manage after operation, the operation should never be done on young children, and patients over 50 have not the same degree of resistance. It has been stated by some authors that men are more favorable subjects than women, but this has not been my experience.

TECHNIC OF CHOICE

A tourniquet is applied well up on the thigh, so as to allow postoperative application of plaster of paris before the tourniquet is removed.

The knee is approached by a U-shaped incision in the skin and soft parts from the inner and outer aspects downward to just below the tubercle of the tibia. The concavity is upward. This U incision gives the surgeon absolute uninterrupted access to all the parts involved in the formation of the new joint and is therefore distinctly superior to the lateral approach. Also it does not interfere with the important extensor apparatus above the knee, as is likely to happen with the inverted U incision or lateral approach.

The technic of arthroplasty should be so designed as to allow passive and active motion at the earliest possible moment without danger of separation of important structures. As the free gliding of the soft structures or "extensor apparatus" just above the knee joint is absolutely essential to free motion and active control, the severing and resuture of these structures as in the inverted U incision, are to be avoided, for, if they are severed, not only is there danger of union being insufficient when one wishes to start exercises and passive motion as early as two weeks after operation but because of the cross section severance, there is danger of adhesions at this point between the gliding intramuscular and tendinous tissues. These considerations lead me to choose an incision that does not section or traumatize these soft structures above the knee and to turn the patella upward rather than downward, as advocated by some.

When the knee is being opened up, care should be taken to leave the skin flap overlying the interior work as thick as possible so that the skin and line of suture will not break down following the operation.

Before the patella is turned upward, the ligamentum patellae is detached with a generous amount of bone from the region of the tibial tuberosity, and including it in the dovetail manner indicated in figure 6. First, two holes for later insertion of kangaroo tendon are drilled, one through the tibial tuberosity and one slightly posterior to it. Then, by means of the motor saw and small drill the tubercle of the tibia is removed with the ligamentum patellae and the patella is turned upward. This bone plastic work is done very rapidly with the motor saw and because of the dovetail mortise conformation and the rapid union of closely fitted broad bone surfaces to bone surfaces the surgeon need not question the detachment of the ligamentum patellae—a question that has been raised by MacAusland who considers it inadvisable to sever or disturb the patellar tendon or its attachment. It is distinctly preferable to detach this tendon, as trying to work around it involves unnecessary trauma to neighboring tissue, slows up the operation and limits access to the joint.

It is well known that bone unites to bone more readily and more firmly than tendon to tendon or fascia to fascia. My method of detaching the ligament takes advantage of this, the dovetail mortise conformation being a further assurance of prompt union and of the prevention against the pulling away of the tendon from the tibia even when bony union has not taken place. Also, prompt union obviates delay in the application of postoperative physical therapy, which should follow within two weeks after the arthroplasty. In marked contrast to this is the union of a severed tendon to tendon, which is both slow and unreliable.

After the ligamentum patellae has been thus detached, the soft tissue and capsule are dissected from the ankylosed joint to which they have become amalgamated, and the whole mass—patella, quadriceps and soft parts—is turned upward, exposing completely the anterior and lateral surfaces of the junction of the tibia and femur.

At this juncture the gliding of the lower part of the quadriceps muscle and its tendon on the lower end of the femur is tested, as well as their length. If this tendon and muscle do not glide up and down satisfactorily and are not of sufficient length, plastic work should be done to lengthen the tendon as well as to bring about its satisfactory gliding on the lower end of the femur. This is a very important feature of the operation, because if the tendon is not long enough to allow postoperative flexion, or if the quadriceps tendon is not free, serious interference with postoperative physical therapy or mobilization of the joint will occur.

It has been my practice to remove all immobilizing splints at the end of two weeks and to institute active and passive motion. If the quadriceps tendon were severed, this early postoperative treatment would certainly jeopardize union. Again, the severance of the quadriceps muscle and tendon and the dissecting downward of the distal portion seriously involve the gliding structures above the patella, which may not have been damaged or destroyed by the original pathologic changes that produced the ankylosis.

After the patella, quadriceps and soft parts have been turned upward *en masse*, one is ready for the bone arthroplasty. With a broad osteotome parallel, broad V-shaped incisions with the apex downward are used in modeling the joint anteriorly and posteriorly.

The lower end of the femur as viewed from its anterior surface, is shaped into a wedge with an angulation of 120 degrees between its plane surfaces. This leaves the tibia with concave plane surfaces at an angle of 120 degrees to each other. These are in turn carefully modeled so as to receive with accurate fit the convex wedge-shaped surface of the femur. This is one of the original features of the operation and is an effective measure in the avoidance of lateral instability, in that, from a mechanical standpoint, weight-bearing forces the wedge contour of the lower end of the femur into the corresponding wedge shaped cavity of the upper end of the tibia. This peculiar contact practically insures stability, and consequently an unusual amount of laxity can be permitted by the removal of an ample amount of bone. A generous amount of bone, particularly at the posterior part of the joint, is removed from what was the tibia and femur, and the remainder is so shaped that it will imitate so far as possible the normal contour of the joint. Great care should be taken not to leave any blocks of bone attached to soft parts in the popliteal space because of the danger of their acting after operation as osteogenic material. It

must be remembered, of course, that the removal of too much bone will favor instability, but the wedge shaped method just described markedly diminishes this possibility.

Great care should be taken to leave the bony surfaces as smooth and plane as possible to facilitate gliding. This is usually best accomplished with a sharp, 1½ inch osteotome, but a file may be used, if necessary. A close study of the conformation of the bony surface of the new joint should be made in order to shape them most favorably for the function of joint motion. The proper conformation of the joint should then be tested by flexing the knee to beyond a right angle. Free motion without impingement at any point should be striven for, before the free fascia and fat graft are obtained. To insure this the patellar ligament with its dovetail bone fragment is replaced temporarily in the original mortise bed.

The joint is again flexed very cautiously to at least a right angle, to check up on the contours and to insure free excursion of the quadriceps tendon and muscle, so that postoperative physical therapy will not be prevented from securing the desired motion.

The joint is then packed with hot saline compresses, while a rectangular graft of fascia lata and fat is being obtained from the central portion of the outer aspect of the thigh. Being a semifluid substance, the fat under pressure after joint closure practically flows into the cavities and absolutely fills up all intra-articular dead spaces, thus preventing the formation of hematoma. For this reason the inclusion of fat with the fascia lata graft seems to me very valuable, and I can not agree with those who advocate the use of fascia lata alone.

If sufficient fat can be obtained with the fascia, the superior portion of the graft is split and the undivided portion placed between the tibia and the femur. The fascial portion of the split end is turned upward and inserted between the lower end of the femur and the quadriceps tendon, and the patella, while the fatty portion is turned downward and placed between the upper end of the tibia and ligamentum patellae and the patella. The graft is sutured with chromic catgut number 1 to the remains of the capsule and soft tissues. The remains of the capsule are then sutured medially and laterally with chromic catgut number 1, the skin is closed with plain catgut number 0, and sterile dressings are applied.

Moleskin straps are applied medially and laterally to the lower leg for traction, and a cast is applied, so constructed as to allow for traction by means of the moleskin. The tourniquet is not removed until the plaster, applied from below upward, has reached it. Removal of the tourniquet before closure of the wound is to be condemned in that in an arthroplasty there are such broad surfaces of raw bone that the large amount of bone ooze cannot be controlled by ligature. Careful observation shows that a larger amount of bleeding will come from the cut bone surface than from the small blood vessels, which will escape ligature if the tourniquet is left on. The compression and immobilizing effect of the well molded plaster of paris with all joint spaces filled with the fat and fascia graft acts as a marked hemostatic influence, and it is therefore preferable to leave the tourniquet on during closure of the wound and application of the cast, thus preventing the very considerable oozing from the bone surfaces which would occur were it

removed. The hazard of hematoma is a real one and should be carefully guarded against.

A pulley and traction apparatus on the bed must be ready for immediate application when the patient returns from the operating room. The patient is held completely under the anesthetic until traction of 15 pounds (68 Kg) is well established on the limb. This is done to prevent muscle spasm, which is likely to occur as the patient comes out from under the anesthetic and which might cause the approximation of the bone surfaces and the crushing of the fascia and fat graft between the bone surfaces. The latter might be a real calamity, leading to ankylosis.

This traction is continued for at least a month and a half after the plaster has been removed and the massage begun. Even after the patient goes home, the traction is maintained throughout the night, although during the day the patient is allowed to walk with crutches, without weight bearing, the latter not being permitted until at least two months after operation.

If, at the end of from three to six months, lateral mobility persists, Hey Groves recommends a second operation to reinforce lateral ligaments. This has not been found necessary with my technique, as in every case the joint has had most satisfactory lateral stability. But I have in several cases done secondary operations to sever restricting bands of fascia or scar tissue lateral to or above the patella which were limiting mobility, and the results have been excellent.

These operations have varied in degree from a short incision and the severance of a small band or two of fascia or connective tissue to an extensive operation in which even the new-formed joint has been entered and extensive soft parts have been severed.

I believe this is a rather radical step that has not been practiced by other men, and I feel very enthusiastic about secondary operations to overcome tissue contractions interfering with motion.

Pain does not usually persist after the first series of postoperative treatments.

The muscles gradually regain their ability to contract, even if they have been inactive for years, the reflexes reappear, the different types of sensation—superficial and deep, paresthesia and sensation of position—are at length reestablished, as in a normal knee.

The nearthroses possess still another characteristic once established, they are never the seat of effusion or of swelling. They seem to be resistant to all hematogenous arthritic processes.

The artificial joint created by the surgeon to relieve ankylosis is by no means an anatomically normal joint. It suffices that there is a joint which functions well (fig 7).

PROGNOSIS

With proper selection of cases, meticulous attention to technique and intelligent postoperative physical therapy, the prognosis for arthroplasty of the knee is good.

With regard to the advisability of operating on a bony ankylosis due to tuberculosis, there is the greatest difference of opinion. I believe that arthroplasty should be approached with due conservatism in such cases but not pessimism. If in the roentgenograms which should be taken in several planes, there are evidences of richly pocketed or cavity formation, or areas of extreme osteoporosis the case is unfavorable, but if the bone structure appears fairly uniform and there are no other unfavorable conditions arthroplasty should be successful. Some of my most brilliant results have been in cases of healed tuberculosis. It should

be emphasized, however, that all evidence of original tuberculous process must have been entirely eliminated for at least four years before this operation is attempted and the roentgenograms should show an unusual homogeneity as to structure of the bone throughout the joint area. At least one year should have elapsed since the last symptom if the infection was pyogenic in character. It is rarely wise to operate in cases of arthritis deformans.

Next to the hip, arthroplasty of the knee has made the greatest strides during the last decade, and such operations on both joints should be recognized as a trustworthy surgical procedure.

INDICATIONS FOR ARTHROPLASTY

Those who have had the widest experience and the greatest success with arthroplasty are unanimous in urging careful selection of patients. In so doing, the following points should be considered:

- 1 The original cause of the ankylosis
- 2 The position of ankylosis (flexion, extension, hyperextension)
- 3 The condition of the patient—not merely the general physical resistance but the condition of the soft parts overlying the joint. Extensive scar tissue, if it cannot be replaced with healthy tissue, is very unfavorable. Extensive adherence of the quadriceps tendon and muscle is also a handicap.
- 4 The psychic, social and occupational factors must all be weighed.

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KNEE JOINT ARTHROPLASTY

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In previous publications I have summarized and discussed the general aspects of ankylosis and arthroplasty of the knee joint. In this report, therefore, I shall present a few features of knee arthroplasty that have stood out prominently in our experience with the procedure at the MacAusland Clinic and show how a number of cases in which we have performed arthroplasties of the knee have withstood the test of time, as to both function and stability.

In our experience with knee arthroplasty, the complication of infection of the operative wound, from latent foci of infection has been not infrequently encountered. This factor does not seem to have been stressed by other surgeons, and possibly they have not encountered it to the same extent. That the complication is not due to operative sepsis I am certain, because the infection has appeared too late after intervention. In the four cases of which I am giving detailed descriptions it may be noted that the infection could definitely be traced to a dormant focus situated elsewhere in the body.

CASE 1—A man aged 50 a rancher, had a complete ankylosis of the knee as the result of a streptococcal infection from his tonsils eight years before we treated him. In spite of his age all factors were conducive to success and we considered the prognosis excellent. On the fourth day after the arthroplasty the patient was somewhat uncomfortable from abdominal distention and gas and for the next two weeks this distention continued to come and go. On the eleventh day after the

arthroplasty, considerable pus was found under the skin flap covering the knee, but there was no definite indication of pus within the joint. By the eighteenth day the patient had a tense, swollen abdomen and was practically moribund, in spite of the efforts of four surgeons who had been consulted regarding the symptoms. Pus was found in the joint region itself. A laparotomy was performed and a gastric perforation found. The surgical and medical aspects of the case then progressed favorably. It is now eight years since the arthroplasty and the patient has flexion of the knee to a right angle and is able to extend his leg completely. The joint is stable and painless. The patient rides with comfort and he is able to play eighteen holes of golf regularly without experiencing any ill effect.

CASE 2—A man aged 26, a state trooper had a completely ankylosed knee as the result of "rheumatic fever." His general health was excellent. Ten days after an arthroplasty was done abscess of the jaw developed and the knee wound became septic. The outcome in this case was poor. It has now been two years since the arthroplasty was done. The knee is again ankylosed, although the patella is slightly movable. Operation will probably be considered again in this case although the knee is ankylosed at about a 12 degree angle and is therefore in excellent position for walking.

CASE 3—A woman in the late twenties had had a multiple infectious arthritis. Arthroplasty of the knee was not performed until a year and a half after the acute process had quieted down. Six weeks after the arthroplasty, a subacute gonorrheal infection in the pelvis became active, and the motion, which up to that time had been free and painless up to 30 degrees, gradually shut down. There was no drainage at any time. The patient now has a stiff knee, and several other joints are ankylosed as the result of this acute infectious process.

CASE 4—A man aged 28 had a completely ankylosed knee as the result of sepsis following the use of tongs in the treatment of a fracture of the lower third of the femur. The arthroplasty of the knee was not performed until nearly two years had elapsed from the healing of the sinuses. When we opened the joint, we found some rust embedded in the old scar tissue around the tong holes, but it seemed to be so high above the joint and so much time had elapsed since the active infection, that we anticipated no trouble. On the tenth day after the arthroplasty, however, there was a slight discharge from the original pin holes, and drainage continued from the posterior aspect of the knee off and on for a period of three months. The chances of gaining motion were thereby seriously interfered with. It is now over a year since the arthroplasty, and the patient is beginning to have a little free motion in the joint.

From our experience I conclude that a thorough examination of the patient before arthroplasty, for the purpose of determining any focus of latent infection, is of vital importance. I do not mean to imply that we have not checked the general condition of all our patients, but without doubt the examination has not been sufficiently thorough. Every possible site of a latent infection—pelvis, tonsils and teeth—must be carefully checked. I believe that if these precautionary measures are taken the number of cases of infection will be decreased.

Again I want to emphasize the well known maxim that an arthroplasty must not be performed until one is certain that the original acute process has quieted down. In our clinic we do not advise arthroplasty until one and one-half years after all signs of infection have disappeared. When the joint is ankylosed as the result of a tuberculous process, mobilization is approached with extreme caution, for such diseased joints may retain small walled-off foci throughout life. In the very rare case in which the health is excellent and in which there has been no evidence of an active process for years, a tuberculous joint may be mobilized successfully. On the whole, we consider that arthroplasty is not advisable in these cases.

The age of the patient is another factor that must be given careful consideration. The most favorable ages for arthroplasty are those from adolescence to 40 or 45 years, but a mobilizing operation is not definitely contraindicated later in life, provided the bone and musculature are in healthy condition. Such was the case in the two patients, aged 50 years, whose histories are given in detail elsewhere in the paper.

A second feature of knee arthroplasty that in my opinion should be stressed is careful modeling of the joint surfaces. This provision of the technic is emphasized for two reasons: first, to preserve the stability of the joint, and second, to avoid the development of arthritic changes in later years. We never sacrifice stability for the sake of obtaining motion. It is better to allow the joint to remain stiff than to create a hypermobile joint, for an unstable knee, even when efficiently protected by a brace, is a handicap and subject to strain and the consequent development of arthritic changes. The preservation of stability presented a difficult problem in the early days of arthroplasty, but now, owing to the refinement of technic, one does not hear so much about lateral instability.

There is a provision made in our technic to preserve stability and to ensure a joint that will not be subject to arthritic changes.

OPERATIVE TECHNIC

A longitudinal skin incision is made, extending downward over the center of the patella. The fascia, quadriceps tendon and capsule are incised by means of either a goblet-shaped incision or a linear incision. The goblet-shaped incision provides for lengthening the quadriceps tendon when the knee has been stiff in extension for a long period. The patella is chiseled from the femur, exposing the tibiofemoral joint. The ligamentous structures are freed from their attachment to the tibia and the femur. Attention is now given to freeing the joint line and modeling the articular surfaces. The tibia is first separated from the femur by means of a gouge, the diameter of which corresponds to that of the femoral condyle in the adult. The articular surface is cut in such a fashion that two semicircular convexities are formed. As the operation proceeds, an assistant flexes the knee so that the remaining lamellae uniting the epiphysis of the posterior region are divided. About 1 cm. of bone is then removed from the femoral surfaces.

The tibial and femoral surfaces are now remodeled to conform as closely as possible to the normal contour of the joint. A well defined spine, corresponding to the intercondylar notch, is left between the concavities in the tibia to ensure stability.

The articular surfaces are next fitted to make sure that sufficient bone has been removed. The surfaces must glide smoothly without any irregular hitches occurring during flexion and extension.

A space into which the patella will fit is cupped out of the upper surface of the femur. As a rule, the patella will be found to be hypertrophied, and it is necessary to narrow it by first removing a third from each side longitudinally and then taking about one third from the joint surface of the remaining section.

The bone surfaces are smoothed by means of files and rasps. This filing, in addition to smoothing the edges, drives a bone dust into the open spaces, which aids in controlling hemostasis and, by roughening the surfaces of the resected edge, causes the aponeurosis of the fascial transplant to adhere more firmly.

The next step is to remove from the opposite leg a large piece of fascia lata, of sufficient size to cover both condyles, both tibial cavities, and the under surface of the patella. The operator first sutures the long flap of fascia over the tibial cavities, at their anterior surface. He then allows the flap to drop back into the popliteal space to a point about $2\frac{1}{2}$ inches upon the posterior surface of the femur. The flap is then fixed to the lateral surface of the tibia with interrupted sutures. Next, the fascia is swept around the femur and wrapped over its anterior surface for about $2\frac{1}{2}$ inches and tied tightly in place with a purse-string suture. The remaining part of the flap is then turned down and sutured to the top surface of the tibia.

The deflected flap, consisting of the patella, capsule, quadriceps and fascia, is replaced. The elongated quadriceps and capsule are sutured, and the skin is closed. A plaster bandage or intrinsic traction splint is applied with the knee in 35 to 40 degrees flexion. The leg is placed in an elevated position in bed.

The after-care must be carefully supervised. About two weeks after the operation, the plaster bandage is split and the leg placed in a ring caliper traction in 35 degrees flexion. This caliper is so arranged that knee motion is possible. By means of an overhead pulley, the patient begins passive motions while in bed, carrying them out usually two or three times a day. The movement should be gentle at first and then gradually increased. Active movements are attempted about the third or fifth week. Massage of the thigh and calf is begun in five or six weeks. About the sixth week the patient can usually walk with crutches. No actual weight bearing is allowed until the lateral ligaments have tightened.

The series of knee joint arthroplasties at our clinic has not been a large one, possibly because we have been extremely cautious in our selection of cases. Unfortunately, I am not able to give an analysis of our complete series, as we were not able to locate many of the patients, despite our painstaking efforts. From our group of cases I have selected five, in addition to the cases described at the beginning of the paper, on which we performed arthroplasties of the knee from six to twenty-three years ago. Our study shows that these patients secured stable and functional knees and that they have continued in this same status for over a period of years, without developing any arthritic changes.

CASE 5—T S, a man aged 21, had a completely ankylosed knee as the result of a chronic infectious arthritis, which was superimposed on an injury to the joint when he was 8 years of age. Six months after the injury the knee was ankylosed in flexion, and we made two unsuccessful attempts to mobilize it by manipulation. It was twelve years before we saw the patient again, and meantime an arthritis had developed in the joint. The knee was ankylosed in 90 degrees flexion.

March 24, 1927, an arthroplasty of the knee was done. The case progressed favorably and the motion increased daily.

Feb. 2, 1933, nearly six years after the arthroplasty, the knee had function of 85 degrees and was a good weight-bearing joint. The only complaint of the patient was that the leg was fatigued after he had been standing on his feet all day at work.

CASE 6—C B, a miner aged 50 had a fibrous ankylosis of the right knee which had resulted from an injury to the lower part of the thigh four years previously. During the year following the injury the joint had been aspirated and drained several times. When we first saw the patient the sinuses had been healed for over a year and the knee had been partially ankylosed for three years. The knee allowed 15 degrees flexion when the patient put his foot on the floor and pushed against

the knee, but there was no voluntary motion. The patient's general health was excellent.

April 29, 1924, an arthroplasty was performed. The case progressed favorably.

In April, 1931, seven years after the arthroplasty, the patient had motion to nearly a right angle and a good stable knee. Shortly after this report was made, the patient disappeared, and his family believe that he committed suicide.

CASE 7—R H, a woman aged 24 had an ankylosed patella following a comminuted condylar fracture of the lower femur.

Nov. 20, 1924, a subpatellar arthroplasty was performed. March 14, 1925, the patella was movable in all directions and the knee was stable. The patient was able to extend the leg voluntarily to within 15 degrees of full extension, but here the patella seemed to stop. A manipulation was done to break up the adhesions.

June 2, 1933, nine years after the arthroplasty, the patient had a stable and perfectly functional knee. Extension to 180 degrees and flexion to 90 degrees were possible.

CASE 8—E P, a woman, aged 30, in 1921 suffered an acute infection of the right knee, probably metastatic in origin from the tonsils. When we saw her in 1925, the knee was ankylosed in a few degrees hyperextension, with a slight knock-knee deformity. The patella was freely movable.

March 5 an arthroplasty was performed.

Feb. 13, 1933, the knee allowed function to 90 degrees and was practically, if not completely, stable. The patient told us that she had indulged in all activities for several years.

CASE 9—F O K, a male, early in 1909, suffered an acute gonorrheal infection in the left knee. The joint was opened and treated. Following the attack the knee was in good position, but there was no motion between the tibia and the femur or between the patella and the femur. Manipulations were unsuccessful in restoring motion.

Dec. 14, 1910, an arthroplasty was performed.

In February, 1933, twenty-three years later, the patient had a stable and functional knee. Sometimes he has to think which is the knee that was operated on.

From our study of the status of restored knee joints after a period of years, in my own cases and in those of other operators, I am convinced that arthroplasty is to be considered a standardized form of treatment for ankylosed knee joints. By this measure a knee that is both functional and capable of enduring can be obtained. The use of this procedure in the knee joint, however, still presents an exacting problem, and its success depends on a most careful selection of cases as well as precise technic. It is my opinion that if arthroplasty is to continue to hold its place in reconstructive surgery of the knee joint, and to increase its scope, careful consideration must be given to the outstanding factors and complications observed in each operator's experience. From my own experience I am convinced that arthroplasty of the knee joint must be approached with particular regard to the following factors: (1) the selection of the case with reference to the age of the patient, and the lapse of time from the flare-up of an acute process, (2) the preparation of the patient with reference to the presence of foci of latent infection, and (3) the use of an operative technic that assures the restoration of a joint that is not only functional but also stable.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. ALDFE AND MACALISLAND

DR. W. BARNETT OWEN, Louisville, Ky. In 1904 Dr. Murphy published his article on arthroplasty. Shortly after it was my good fortune to observe four arthroplasties of the knee for ankylosis from tuberculosis. In each instance there was an absolute failure. Of course the technic of arthroplasty has been greatly improved by this time, but I am still of the same opinion that a joint ankylosed from tuberculosis should not

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be subjected to arthroplasty. The indication for arthroplasty is principally in trauma, fracture, injury to the joint, ankylosis, and some pyogenic infections that have subsided. When that time is I am not prepared to say. I have operated in some of those cases and I thought that sufficient time had elapsed, only to find later that I was mistaken. I don't believe that one can tell when my joint is and will remain absolutely free of infection if operative intervention is instituted. Generally, I would say that more than 50 per cent of the limited number of cases I have had of arthroplasty of the knee joint have been satisfactory to me or to the patient. Arthritis has developed in a limited number. As is well known, arthroplasties of the jaw and of the elbow are much more favorably regarded because of the location of the joints. It is necessary to have stability in my joint, but that is not so imperative in a joint that is not weight bearing. One can have a very useful elbow that isn't absolutely stable, but it will have a good, painless range of normal and very helpful motion that is satisfactory to the patient. Dr. Albee has instituted new procedures that are unique and in his hands, I am sure, of great advantage.

DR. J. S. SPEED, Memphis, Tenn. I am still of the opinion that there are economic reasons why one should refuse to do arthroplasties. I believe that the postoperative care and physical therapy are extremely important and that, unless the patient can afford to have these arthroplasties should not be recommended to them. Patients who do hard manual labor should be chosen with considerable thought, for the reason that many of them will not obtain a knee sufficiently strong and durable to stand the stress of their occupation. One should also make sure that the muscular development of the extremities is brought up to the highest possible point before the operation is undertaken. I believe that tuberculosis is a definite contraindication. It is true that Dr. Albee and many others have obtained excellent results in tuberculous joints, but there have been many disasters following it. The serious results that follow the lighting up of an old tuberculous process in a joint far outweigh the occasional good results that may be obtained. Another definite contraindication to arthroplasty is the joint that has become ankylosed following osteomyelitis. The infection here has involved the bony structure about the joint, and deep seated foci of infection may remain active in such bones for an indefinite period of time. Any operation on such a bone is likely to be followed by a lighting up of the old infection. I have attempted arthroplasties on the knee in six cases with stiffness and deformity following osteomyelitis. In all these cases the infection was relighted and the arthroplasty a complete failure. I have come to the definite conclusion that arthroplasty should not be advised in joints ankylosed from osteomyelitis. I have seen an aseptic sequestration of portions of the newly formed condyles of the tibia or femur following arthroplasty of the knee with resulting irregularity of the weight-bearing surface of the joint and some instability. The cause for this aseptic necrosis is probably a disturbance in the blood supply of the bone at the time of operation. It is an interesting observation that the roentgenographic appearance of the joint following arthroplasty is not a true indication as regards its function. Many joints showing irregularities in the articular surfaces and the formation of osteophytes or exostoses about the joint have proved to be good functional joints. On the other hand, some that have shown remarkably good contours from a roentgenologic standpoint have either been painful or have not secured a satisfactory range of motion. I prefer not to gain motion too rapidly following the operation but to carry it along gradually, forcing an increase in motion as muscle development improves sufficiently to take care of it. I think that in this way many cases of instability in joints following arthroplasties may be avoided.

DR. EDWIN W. RIERSON, Chicago. The subject of arthroplasty is of such great importance that I think an attempt should be made to arrive at some unanimity of thought. I observed that Dr. MacAusland favors the Putti incision. I tried this incision in a long series of cases but had so much trouble with the lack of blood supply in the ends of the flap directed upward that I abandoned it, and I do not propose to use it any more. A straight incision down the front of the knee to the inner side of the patella, as mentioned by Dr. Speed, is satisfactory for any arthroplasty of the knee. I do not

think that it is always necessary to detach the tubercle of the tibia, as shown by Dr. Albee, but it is very satisfactory and I have used this method a number of times in the last few years and find that it works extremely well. The bone of the tubercle of the tibia unites much more rapidly and more satisfactorily than does the quadriceps tendon when it is cut above the patella. The stability of the knee joint is a point that has been insisted on, in my opinion, too much, in certain classes of cases. Take a young woman who is employed at light work and who doesn't have to follow the plow. It is much to her advantage to have a knee that she can bend enough to get out of the way of other people in the street car or automobile or while sitting in the ordinary chair. I have questioned a number of young women on whom I have performed an arthroplasty of the knee, and although they had some lateral instability of the knee joint they were unanimous in stating that they much prefer to have a moderately unstable knee which they can get out of the way of other people's feet. Next about the ingenious method of Dr. Albee in cutting a V-shaped notch into the lower end of the femur. It seems to me that it is not good mechanically and I think that it would not be good practically. Most of his other ideas I agree with thoroughly. It doesn't seem reasonable to cut off the two most important weight bearing parts of the lower end of the femur and to substitute for them the intercondylar notch as the weight-bearing part of the knee joint. I don't think it is necessary, because I have so many good knee arthroplasties in cases in which the lower end of the femur was cut straight across in the proper way. I think that no tuberculous joint should ever have an arthroplasty performed on it. I have done two arthroplasties in a presumably healed tuberculous joint and the tuberculosis recurred in both. Next in regard to the type of infection causing the ankylosis. I think the gonorrheal ankylosis is by all odds the best to attack in an operative way. Next are those cases of infectious acute arthritis which used to be called acute rheumatism, in which ankylosis occurs rapidly. I will once more refer as I have many times before, to the question of fat necrosis in arthroplasties of the knee. I have had seven cases of women who were very fat and on whom I did excellent knee arthroplasties. A fat necrosis occurred, at first apparently without any infection, and each one of those knees became reankylosed and the operation consequently failed.

DR. FRED H. ALBEE, New York. This discussion has been most interesting. There was, however, a misunderstanding concerning the wedge modeling. The purpose is not to allow the crest of this wedge to bear any more weight than any portion of the new joint surface. It is a convex wedge the joint surface resting in a concave joint surface. When the limb is lifted from the floor the joint surfaces drop away from each other, allowing free motion. Weight bearing jams the wedge surface into a concave wedge cavity, thus giving lateral stability.

DR. W. R. MACAUSLAND, Boston. I think that some of the men do not understand why the quadriceps is elongated. I have no argument with anybody about an incision. The first question is: Does the joint check up as a functional and stable joint afterward? I prefer the Bennett elongation of the quadriceps for this reason. If one places a knee joint after arthroplasty in extension, one will have a lot of trouble gaining motion. I train the knees before arthroplasty and increase the muscular tone of the thigh by violent contraction of the quadriceps preparatory to operation. If a knee after arthroplasty is put in about 30 to 35 degrees flexion, even though the quadriceps has been cut (about which operation I have had not one bit of difficulty), earlier motion can be started. I begin at 35 degrees flexion and move to straight extension by the apparatus devised by Dr. Warren White for me. I start rather early motion by voluntary muscle contraction. That is the object of the Bennett elongation of the quadriceps as applied to arthroplasty of the knee.

Advances in Cardiology—In this century there have been two notable advances in cardiology: first, the recognition of auricular fibrillation and second the perception of coronary infarction as the pathological basis of one type of anginal pain—the "status anginosus"—Hay, John. *Certain Aspects of Coronary Thrombosis*. *Lancet* 2:787 (Oct. 7) 1933.

PRECONCEPTIONAL AND PRENATAL INFLUENCES AFFECTING THE NEW-BORN

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ATLANTA, GA

In attempting to determine the causes of umbilical hernia in the Negro it was noticed that there was a definite relationship between variations in the incidence of hernia, birth rate, average birth weight, prematurity and deaths during the first week of life. Seasonal variations occurring consistently in each study strongly suggest the importance of the preconceptional and early prenatal periods and give some indications as to possible causes.

Since syphilis might influence some of these conditions, all cases in which either the mother or the infant showed a positive Wassermann reaction were excluded.

BIRTH RATE

There were 5,564 live Negro births in Atlanta during 1930, 1931 and 1932. There was an average of 491 infants born during the winter quarter, 458 in spring, 454 in summer, and 440 in the fall. The low rate of 440 in the fall corresponds to the group conceived during the winter quarter and the high rate of 491 to the group conceived in the spring.

AVERAGE BIRTH WEIGHTS

The average birth weight of two groups of white infants was determined to compare with that of the Negro. The private patient group of 955 white infants averaged 7 pounds 10 ounces (3,460 Gm). The ward group of 1,801 white infants averaged 7 pounds 9 ounces (3,430 Gm), and the group of normal Negro infants averaged 6 pounds 14 ounces (3,120 Gm).

There is little difference in the white groups but nearly 12 ounces (340 Gm) difference between the combined white groups and the Negro group.

Chart 1 shows the trend to seasonal variations in the two groups of 1,154 and 1,272 Negro infants. There seems to be a tendency to follow the curve of the average hours of sunshine for Atlanta for the same time interval. This tendency holds true for white infants. A more detailed study of birth weights will be published at a later date.

There is also a geographic variation in birth weights. In a study of approximately 1,000 white infants over a period of a year, E. D. Plass¹ reports for Iowa City an average of 7 pounds 5 ounces (3,320 Gm). Martha Eliot² reports an average birth weight of 7 pounds 6 ounces (3,350 Gm) from New Haven, Conn.

C. C. Rudolph³ reports an average of 7 pounds 7 ounces (3,375 Gm) from St. Petersburg, Fla., and the Atlanta average for white infants is 7 pounds 9 ounces (3,430 Gm).

It would seem that there is a tendency for the average birth weight to increase in the southern portion of the United States.

UMBILICAL HERNIA

During the embryologic stage in development the umbilical ring is the remains of the coelomic funnel as it passes through the linea alba.

The material for this study was furnished through the courtesy of Merd John on & Co.
From the Departments of Pediatrics and Obstetrics, Emory University School of Medicine.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.
1. Personal communication to the author.

Between the second and the third month of fetal life the intestine recedes into the abdominal cavity and leaves a depression in the wall which lies above and to the right of the umbilical arteries and below and to the left of the umbilical vein. Cullen² termed this the weak spot, and it is said to be the weakest place in the abdominal wall. It is the relaxation of this umbilical ring that allows the protrusion of the intestine and peritoneum, which make up the umbilical hernia contents. The umbilical fascia is present as a reinforcement in comparatively few cases.

Since these hernias appear during the first few days of life, the factors causing relaxation of the ring are unquestionably prenatal in time. Therefore it would seem probable that the presence of an umbilical hernia, in an otherwise normal infant, is caused by an inherent weakness in the connective tissue framework of the body. There is a simple relaxation of the ring and a stretching of scar tissue which could normally withstand the increased intra-abdominal pressure caused by crying and straining. It is probable that the weakness dates back to the early weeks of pregnancy or even to some deficiency during the preconceptional period. This is supported by the seasonal variations shown later.

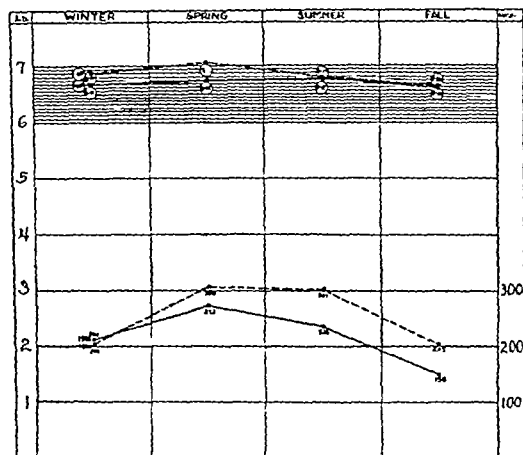


Chart 1—Trend to seasonal variations in two groups of Negro births

The incidence of umbilical hernia in 2,023 normal Negro infants was 270 per thousand. In 1,808 white infants the incidence was 82 per thousand.

In a study of the incidence according to the months of birth, the winter quarter showed an average of 260 per thousand, spring, 270, summer, 270, and fall, 386 per thousand. The group showing the highest incidence, in the fall, was conceived in the winter quarter.

PREMATURITY

In the Emory University Division of Grady Hospital all Negro infants weighing 5 pounds 8 ounces (2,495 Gm) or less are classed as premature infants. Stillbirths and syphilitic infants were excluded.

Prematurity was approximately twice as common in 3,255 Negro infants as in 1,801 white infants.

In a study of the seasonal variations in the rate of prematurity in the Negroes, it was found that there were 86 per thousand in the winter quarter, 108 in the spring, 86 in the summer, and 133 per thousand in the fall. The high rate corresponds to the group conceived in the winter quarter.

2. Cullen, T. S. Embryology, Anatomy and Diseases of the Umbilicus. Philadelphia: W. B. Saunders Company, 1916, p. 23.

There seems to be a possible relationship between the annual rate of prematurity in the Negro and the total hours of sunshine for the year, as shown in table 1

The highest rate occurred in 1932, when the hours of sunshine were lowest. However, it is probable that other factors play a part in determining the rate

DEATHS DURING THE FIRST WEEK OF LIFE

The following significant statement is taken from the report of the New York Health Commission³ for the year 1932: "In the first six days after birth, one

TABLE 1—Possible Relationship Between Rate of Prematurity and Hours of Sunshine

Year	Total Hours of Sunshine (Atlanta)	Rate of Prematurity per 1,000 Live Births
1930	2,870	109
1931	3,004	88
1932	2,630	113

half of all infant deaths occur, and the greater proportion are due to prenatal and natal causes. Moreover, little change has occurred in fifteen years, the 40 per cent reduction in infant mortality between 1915 and 1930 has been due chiefly to the saving of life among older infants."

Table 2 shows that the same is true of 5,564 Negro infants born in Atlanta during 1930, 1931 and 1932

The seasonal variations in the rate of death during the first week of life for this group is as follows: winter quarter, 46 per thousand, spring, 41 per thousand, summer, 43 per thousand, fall, 58 per thousand. The group showing the highest rate (fall) was conceived in the winter quarter.

EXPERIMENTAL STUDY

An attempt was made to determine what effect, if any, viosterol might have on the infants of Negro mothers to whom it was given in the late weeks of pregnancy. One hundred and twenty-five mothers, with negative Wassermann reactions, were given 20 drops daily for an average period of six weeks before delivery. The average birth weight of ninety-three of these infants was 7 pounds 2 ounces (3,240 Gm.), as

TABLE 2—Negro Infant Mortality

Year	Deaths During the First Year per 1,000 Live Births	Deaths During the First Week per 1,000 Live Births
1930	145	60
1931	118	52
1932	90	43

compared with an average of 6 pounds 14 ounces (3,125 Gm.) for 290 controls born during the same period.

The incidence of umbilical hernia for the experimental group of ninety-three was 300 per thousand, as compared with an incidence of 270 per thousand for the average Negro infant.

The group is too small to be especially significant, however, it would seem to indicate that the birth weight was influenced favorably in late pregnancy, while the incidence of umbilical hernia was not affected. As previously brought out it would seem that umbilical hernia is influenced early in pregnancy.

SUMMARY

Chart 2 shows a summary of the seasonal variation of the incidence of umbilical hernia, the incidence of prematurity, the birth rate and deaths during the first week of life. There is a sharp rise in the fall quarter for hernia, prematurity and deaths during the first week of life, and a decline in the birth rate.

A reasonable explanation is offered in following the arrows from the groups showing these changes to their period of conception, which occurs in midwinter. It is interesting to speculate as to what factors might cause these weaknesses in infants conceived in the midwinter months.

It has been brought out in this study that umbilical hernia, prematurity and deaths during the first week of life are much more common in the Negro than in the white infant.

The curve of birth weight shows a tendency to follow the curve of sunshine.

Negro infants conceived in the winter quarter show a decided increase in the weaknesses mentioned.

Since the pigmented skin of the Negro is known to filter out much of the available ultraviolet radiation it seems not unreasonable to suspect that deficiencies in

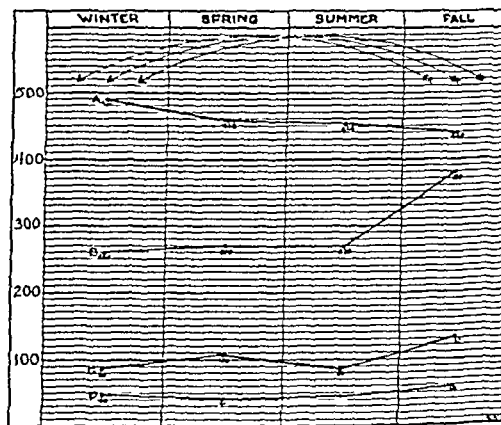


Chart 2—Summary: A, average birth rate of 5,564 infants; B, average incidence of hernia in 2,023; C, average incidence of prematurity in 3,255; D, death rate in first week of life among 5,564 infants. The arrows point to the months of conception.

vitamin D may play an important part in causing these defects and may partially explain the increased frequency in the Negro, especially when pregnancy begins in midwinter.

Maurer and Tsai⁴ think that vitamin B complex deficiencies have an important influence on the pregnant mother. It is during the winter quarter that the average diet is most deficient in vitamin B complex.

CONCLUSION

It seems probable that the periods of greatest importance for the well being of the new-born infant are those months immediately preceding pregnancy and the early months of pregnancy.

205 Exchange Building

ABSTRACT OF DISCUSSION

DR. FRED L. ADAIR, Chicago: Dr. Bivings has touched on vital influences which affect not only individuals but also social groups. The effect of these influences on the development of umbilical hernia would be of greater importance as the manifestation of a general law than as a condition in itself. In considering preconceptional influences, one has to consider

³ Report of the New York Health Commission for 1932.

⁴ Maurer, Siegfried and Tsai, L. S. Illinois M. J. 61: 30 (Jan) 1932.

the hereditary influences that are carried in the genes of the various chromosomes of both germ cells and factors that influence the germ cells in whole or in part and are transmitted to the embryo and affect it in its individual development, the former being hereditary, as an integral part of germ plasma, and the latter being nonhereditary. Antenatal influences begin after fertilization takes place and are environmental but nevertheless modify more or less the hereditary and transmissible factors mentioned. So far as influences operating on the actual development are concerned they must begin during the early weeks of gestation. Once tissue development and organogenesis are under way at two months' gestation, the remaining portion of intra-uterine life is largely one of growth. The pathology of this early gestational period is largely teratologic, while later intra-uterine life is subject to diseases affecting physiologic and anatomic growth. Umbilical hernia is a developmental tissue growth defect at the umbilical ring. This may be hereditary, as is indicated by the observation that this condition is more frequent in the Negro race. If it is due to any prenatal influences that affect embryonic and fetal development, they must operate in the early weeks of gestation before organ and tissue development are well under way. Factors affecting growth and extrinsic diseases may, of course, be potent during any period of gestation. Such conditions as congenital heart defect or spina bifida would have their roots in the preconceptional period or early embryonic life. Syphilis and other congenital infectious diseases might affect the growing progeny at any time. To be considered during these periods are (1) hereditary conditions and (2) nonhereditary transmissible disorders, (a) early manifestations of preconceptional factors and environmental influences on the embryo which cause either death or maldevelopment, and (b) late manifestations of maldevelopments due to the factors mentioned, disturbed growth, and the results of congenital disease derived from the mother, usually infections or toxic manifestations. These various disorders may cause embryonic or fetal death or neonatal death or may manifest themselves variously during infancy, childhood, adolescence, maturity or retrogression. These disorders are not solely physical and anatomic but are also physiologic and affect the structures of the central nervous system as well as the organs of digestion.

DR RAYMOND L. SCHULZ, Los Angeles. Dr Bivings is correct in stating that preconceptional conditions are the cause of these deformities. I am absolutely convinced of the correctness of the theory expressed by R. Clay Jackson. I will give some idea of how this system works. A predominance in the sex of the offspring has been accomplished in controlled experimental animals. For example of a pair of rabbits, the male is kept in complete shade while the doe is kept out in the sunshine for a month or longer. During twilight and the night, proximity is permitted to insure mating at the expected time. The resultant litter will approximate 80 per cent males. By reversing the environmental conditions a similar female predominance is secured. The sex of the offspring favors the sheltered parent protected from sunlight. Besides the sunshine-shelter differential in man other factors come into play, namely, the relative weights of the parents and the colors of the hair and eyes. How are abnormalities produced? In bisexual conjugation if there is a good contrast in the cellular potentials of the gametes, the stronger will impose its sex on the offspring. If the two gametic potentials are about equal there will be a contest of two forces within the new organism each trying to impose its characteristics on the offspring. These conflicts may result in constitutional disturbances anatomic, endocrine, neurologic and immunologic subnormalities. This is the threshold of a new era studying the pathologic results caused by incorrect human breeding. When parents will adjust their sunshine and shelter habits in accord with their natural gradients they can be assured of obtaining 100 per cent perfect male or female products.

DR LEE BIVINGS, Atlanta, Ga. Dr Adair mentioned the possible connection between defects I discussed and other defects. The great prevalence of rickets in the Negro is well known. It was not possible in my study of Negro infants to be able to examine each one but I did so in the study of 1608 white infants. I was unable to connect the incidence of umbilical hernia with

rickets or any developmental defect. Many of the finest looking babies seen had umbilical hernias without any other sign of defect, without any evidence of rickets, or without any evidence of inguinal hernia. I think the cause of umbilical hernia and many other defects is probably active early in pregnancy or even before pregnancy occurs. Dr Schulz commented on the effect of ultraviolet rays. The pigmented skin of the Negro filters out most of the ultraviolet radiation that he would ordinarily receive on the earth's surface. I attempted to correlate the effect of smoke and clouds and various conditions of that sort. There has been so little experimental work or actual tabulation of data on the subject of the effect of clouds and smoke on the ultraviolet rays that nothing exists on which to base a study. There has been some work done by the Mellon Institute in Pittsburgh in which it is shown that the seasonal variation in ultraviolet radiation is the same as sunshine, except that it is probably from 25 to 40 per cent of the total hours of sunshine quantitatively. Hess has shown experimentally that ultraviolet radiation as applied to rats is intercepted by the pigmentation. He took a group of white rats and a group of black rats and produced rickets by diet and then cured the rickets in the white rats but could not in the black rats because of their pigmented skin. The same thing naturally applies to the Negro. Rickets is very common, and the incidence of umbilical hernia and prematurity is much more common in the Negro than in the white race. I believe that the nutritional condition of the mother is the largest factor. Just what brings about the nutritional condition I cannot say, except that economic conditions do play a part. Dr McCord knows that many of these mothers coming to the hospital for delivery are actually hungry. That is bound to have an effect on their offspring, particularly if the condition has existed throughout the entire period of pregnancy. Just why the seasonal rise in there cannot be explained on nutritional grounds alone.

RADIOTHERAPY AS A METHOD OF IDENTIFYING CERTAIN VARIETIES OF TUMOR

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ROCHESTER, MINN.

Among the methods of identifying and classifying tumors, microscopic examination has for a long time stood preeminent. Until now, in fact, it has been the only method by which substantial accuracy in the identification of neoplasms can be achieved. Without microscopic examination the classification of new growths would be as rudimentary as it was before the development of microscopic pathology. From the standpoint of science in general and medicine in particular, the microscope undoubtedly is one of the most valuable instruments ever invented. If microscopic examination of diseased tissue does not invariably lead to accurate identification of lesions benign or malignant, the fault does not lie with the instrument but with the human observer, the accuracy of whose observations and deductions depends on the quality of the optical system of the microscope, the acuity of his own vision, the range and depth of his knowledge of pathology and other phases of medicine, his experience and, finally, his general intelligence. A number of factors may make the task of the pathologist more or less difficult. The tissue that he receives may or may not have been an essential part of the tumor, the excised tissue may have come from a part of the growth that may not truly represent the neoplasm as a whole. The interval between removal of the specimen and examination may have been so long as to have allowed the tissue to

From the Section on Therapeutic Radiology, The Mayo Clinic.
Read before the Section on Radiology at the Eighty-fourth Annual
Session of the American Medical Association, Milwaukee, June 16, 1933.

degenerate. The specimen may have been improperly fixed, or the fixative may have undergone deterioration. The tumor may present unusual features or may be of a kind with which the pathologist may not have had extended experience. Under the circumstances, absolute accuracy in the identification of lesions is, from a practical standpoint, an unattainable ideal. As evidence it is only necessary to mention the common inability of pathologists of great experience to agree on the character of a given tumor. Moreover pathology, like all other branches of knowledge still has dark corners into which light has not yet penetrated. In spite of these difficulties, however, the ability of an experienced pathologist to identify tumors accurately in a large proportion of cases is quite remarkable.

Great as is the ability of the really competent pathologist to recognize the true character of cellular changes, the condition of tissues and the steps through which such alterations have been brought about, cases are occasionally encountered in which his interpretation proves to have been erroneous. Sometimes he alters his opinion spontaneously, or he may be forced to do so by subsequent developments which invalidate his original view. In other words, the pathologist as a human being is subject to error, and too commonly the clinician and surgeon expect too much from the pathologist, who cannot relieve the impossible. Moreover, the average physician has come to rely too blindly on the verdicts of the pathologist, and conflicting physical, clinical and roentgenologic data are sometimes disregarded when their analysis would lead to a more accurate diagnosis than unquestioning reliance on microscopic observations, which, for various reasons, may not be trustworthy. The excessive faith of many physicians has probably arisen from the close collaboration that has grown up between the surgeon and the pathologist. Exceedingly valuable as such collaboration undoubtedly is, because microscopic inspection of diseased tissues serves either to confirm or to correct the necessarily rough visual impressions of the surgeon, whose judgment would otherwise have to depend on unreliable surface appearances, microscopic examination of a tumor may not necessarily be conclusive. In spite of the accumulated knowledge and experience in this field of medicine, the identification, and especially the classification, of tumors are still surrounded by a certain measure of uncertainty. The most experienced pathologists frankly admit that they are often puzzled and uncertain. Indeed, the greater the knowledge and experience of the pathologist, the more ready he is to admit doubt or confess to actual ignorance.

My object is not to belittle the pathologist but to draw attention to the fact that, in some cases, another method of identifying and classifying certain varieties of neoplasms is available. The range of usefulness of this method is not nearly so broad as that of the pathologic method, but within its own range it is as dependable as, and sometimes actually more dependable than, the microscope. I refer to radiotherapy or, more specifically, to the reaction of certain kinds of tumor to roentgen rays or radium. Like the pathologic method, the radiotherapeutic method of identifying tumors is effective and dependable only when applied by an experienced radiologist or radiologic clinician who has had this phase of radiology specifically in mind for a sufficiently long time to have acquired assurance.

In the majority of cases the history, the clinical features and the physical observations furnish more or less definite clues to the nature of the pathologic

process and to the organ or tissues primarily affected. In some cases, however, a high grade of clinical skill and extensive experience are required to solve what may appear as a complicated puzzle, but sometimes even then a measure of doubt may persist. It is at this point of uncertainty that the pathologist's report comes to solve the problem or to make the issue worse confused. This depends on the ability and personality of the pathologist and on the training and faith of the clinicians who receive his report. If the pathologist has been trained to regard an embryonal carcinoma of the testis as a round cell sarcoma, and if the attending physician is not aware of the difference, the patient may pay for their ignorance with his life or with the loss of from several months to several years of useful activity. Or a patient's symptoms being chiefly or wholly abdominal, and yet not pointing clearly to any one organ or structure, a surgeon may be called and the patient may be subjected to an exploratory laparotomy when proper exposure of the abdomen to roentgen rays might, by causing the abdominal mass to diminish in size from 25 to 75 per cent in two or three weeks have proved it to be Hodgkin's disease or lymphosarcoma, and the patient might have been saved from an unnecessary operation. Or, if the pathologist cannot distinguish between diffuse endothelioma of bone and osteogenic sarcoma the patient may lose the chance of permanent cure which, though none too great at best, might result from well planned irradiation. In fact the exceptional radiosensitiveness of endothelioma of bone was one of the chief points that led Ewing to recognize this variety of neoplasm as belonging to a distinct group.

THE RADIOTHERAPEUTIC METHOD

The radiotherapeutic method is based on the well established fact that each variety of cell in the body has a specific sensitiveness or, rather, a specific range of sensitiveness to roentgen rays or radium. This is not intended to imply that all cells of one kind, such as lymphocytes or squamous epithelial cells, react at exactly the same rate and to precisely the same degree to a given dose of rays. A certain measure of variation in reaction must occur because different cells of the same kind are struck by the rays while in different stages of metabolism. Other still unknown factors also may play a part. However, if allowance is made for such variation, and if reaction time is taken as a criterion, the specific sensitiveness of each kind of cell looms up as the dominant single fact of radiology and deserves to be recognized as a law. And yet the existence of such a law and of its medical and biologic implications is not generally realized. For years much has been made of the dogma that pathologic cells are more radiosensitive than normal cells, but, as Lazarus Barlow and others have shown, the foundation on which this dogma rests is not as broad as one might infer. The notion that pathologic cells are more radiosensitive than normal cells of the same kind is valid only to the extent that the rate of mitosis of cells is affected by the pathologic disturbance. The significance of this factor, therefore, is limited to tumors and to processes of which cellular hyperplasia is an important feature. Such influence is small as compared with the specific natural susceptibility of each variety of cell and with the age or metabolic status of the cells. Although the factors responsible for such specificity have not yet been determined, the sensitiveness peculiar to each kind of cell appears to be related chiefly to the

natural life cycle. Thus the lymphocytes, the metabolic cycle of which among human cells is the shortest, are also the most radiosensitive, and the nerve cells the life cycle of which is the longest, are also the most resistant to irradiation. But to this question as to many others the final answer has not yet been given.

When, according to their radiosensitiveness, certain cells or groups of cells are exposed to a sufficient dose of roentgen rays or radium, the first perceptible effect is an alteration of or series of changes in the nuclear portion or genetic mechanism, of the cells. These changes are characterized collectively by arrest of mitotic division and by partial or complete degeneration of the cells, and individually by disorganization and fragmentation of the nuclear chromatin, vacuolar degeneration of the protoplasm, rupture of the cell and scattering of the fragments of chromatin from the nucleus among the remaining intact cells. The chromatin debris is then gradually absorbed by phagocytes (phagocytic reticular cells or macrophages), while the liquid portion of the degenerated cells, together with the ferments and antibodies which they previously contained, is liberated, becomes mixed with the tissue fluids, and ultimately finds its way into the blood. Moreover, if the time intervening between irradiation and perceptible reaction is taken as a criterion, it will be found that certain species of cells react more rapidly than others to a given dose, or that the degree of reaction to the same dose is greater for some kinds of cells than for others. According to present knowledge, cells may be classified, according to their radiosensitiveness, in the following order:

Lymphoid cells (lymphocytes)

Polymorphonuclear and eosinophilic leukocytes

Epithelial cells (1) basal epithelium of certain secretory glands, especially of the salivary glands, (2) basal epithelium (spermatogonial cells) of the testis and follicular epithelium of the ovary, (3) basal epithelium of the skin, mucous membranes and certain organs such as the stomach and small intestine, (4) alveolar epithelium of the lungs and epithelium of the bile ducts (liver) and (5) epithelium of tubules of the kidneys

Endothelial cells of blood vessels, pleura and peritoneum

Connective tissue cells

Muscle cells

Bone cells

Nerve cells

Thus, the epithelium of the skin stands about half way between the extreme radiosensitiveness of lymphocytes on the one hand and the comparatively great resistance of nerve cells on the other. Although the difference in susceptibility between the most sensitive and the least sensitive varieties of cells is considerable, none of the cells are wholly invulnerable to irradiation, all cells whatever their variety, may be destroyed or injured if exposed to a sufficiently large dose of rays, especially if doses within the therapeutic range are disregarded.

The difference in susceptibility between lymphoid and epithelial cells is sufficient to enable one to distinguish readily between the two. Whereas lymphoid cells are rapidly influenced by moderate irradiation and undergo more or less marked inhibition of mitosis and degenerative changes within from half an hour to three or four days, corresponding changes in epithelial cells are caused only by a much larger dose of rays and do not become apparent for a week or even longer. A tumor derived from squamous epithelial cells never undergoes clinically perceptible retrogression within one or two weeks after irradiation, whereas lymphoid

tumors usually begin to retrogress within from one to three days. The difference is so striking as to exclude all doubt. When such an example is presented to physicians who are unacquainted with the range of sensitiveness of different varieties of normal cells, they tend to assume that, as different tumors of the same kind vary somewhat in their susceptibility to irradiation, the difference might be accounted for in this way. But familiarity with the relative sensitiveness of cells and extended experience render such an explanation untenable.

As I have already intimated, such knowledge, by itself, can be applied effectively only to tumors derived from the more radiosensitive varieties of cells, but since its application may be both direct and indirect, the method may be of considerable value. To illustrate what is meant by direct or indirect application it is only necessary to mention a few examples. When the clinical and pathologic features of the patient's condition point to Hodgkin's disease or lymphosarcoma, and the response to irradiation confirms the clinical and pathologic features, this would be direct application of the method. But when the clinician or the pathologist, or both, regard the condition as one of carcinoma, but the reaction to roentgen rays indicates lymphoblastoma, this would be an indirect application of the method. Instead of direct and indirect, it might perhaps be better to speak of positive and negative applications of the method. At any rate, in tumors derived from radiosensitive cells, such as Hodgkin's disease, lymphatic or myelogenous leukemia, lymphosarcoma, embryonal carcinoma (often mis-called round cell sarcoma) and mixed, or teratoid, tumor of the testis, diffuse endothelioma (endothelial myeloma) and chondrosarcoma of bone, radiotherapy can almost always be depended on to furnish absolute diagnostic indications, irrespective of clinical or pathologic observations, so much so that on this ground alone, the experienced therapeutic radiologist can render valuable assistance in the diagnosis of obscure or doubtful cases. Moreover, if the clinical data, the physical observations and the rate of regression of the tumor or tumors should agree in indicating any of the conditions mentioned, the resulting diagnosis will be supported by microscopic examination or, if not, the pathologist's interpretation will generally be found inaccurate.

By radiotherapy alone, the radiologist cannot distinguish between Hodgkin's disease and lymphatic leukemia or between the former condition and lymphosarcoma, but he can distinguish absolutely between any one of these conditions and any variety of epithelial or connective tissue tumor (carcinoma or sarcoma other than lymphosarcoma). He can distinguish lymphoblastoma from tuberculous adenitis. He can distinguish an embryonal carcinoma or a mixed (teratoid) tumor from tuberculosis of the testis. He can distinguish diffuse endothelioma of bone from chondrosarcoma or osteogenic tumor. In other varieties of tumor absolute distinction by radiotherapy alone is impossible, but correlation of the clinical, physical, roentgenologic and radiotherapeutic data may often settle the diagnosis without a biopsy or in the face of inconclusive or conflicting pathologic observations.

CASE 1—A man aged 36 who registered at the Mayo Clinic May 6 1924 had been well until November or December 1923 when he began to suffer from a dull ache in the upper right abdominal quadrant. The pain was not constant and often radiated to the right groin and testis. He had been able to work steadily in spite of it. Besides hemorrhoids a thorough

examination failed to disclose the cause of the pain. Internal and external hemorrhoids were ligated and excised, May 15, 1924, but this did not influence the abdominal pain, which continued, although a little later it shifted to the right lower quadrant of the abdomen. In May, 1927, a rather indefinite mass was found in the left epigastric region, and in January, 1928, the mass had become more definite, had increased in size and additional symptoms, including gas distention after eating, developed. An exploratory laparotomy was performed, Feb. 4, 1928, and the surgeon found a tumor which to him, appeared to be carcinoma of the pancreas. A specimen from the tumor was examined microscopically, and the pathologist reported it as carcinoma, graded 4.

Between February 20 and 28, the patient was given a course of roentgen irradiation to the entire abdomen from front and back, through eight fields. This was followed by prompt regression of the abdominal tumor and by correspondingly rapid improvement in his condition. By April 11 he had gained 15 pounds (68 kg.) and was much stronger. Except for a slight, occasional pain around the incision the abdominal symptoms had disappeared, but a node in the left submaxillary region had become sufficiently large to attract the patient's attention.

After a second course of treatment, given between April 11 and April 16, 1928, the abdominal tumor and the symptoms disappeared completely. In November, 1928 the condition of the abdomen was normal, but lymph nodes in the right occipital, cervical and submaxillary regions, as well as in both axillae, were found enlarged. The nodes diminished rapidly soon after the neck and axillae were treated. From December 1928, until February, 1933, the patient's condition fluctuated. At times fresh lymphadenopathy in the neck and elsewhere developed, but under treatment this subsided and disappeared for long periods, to reappear later. The condition of the abdomen was satisfactory for some time. Later, however, evidence of fresh lymphoid hyperplasia became apparent but disappeared after irradiation. It was necessary to treat the patient at intervals of from one to six months. Early in 1933 his general condition deteriorated perceptibly and he died, Feb. 20, 1933.

The rate of regression and of general improvement was characteristic of lymphoblastoma and quite different from the slow partial regression sometimes observed after radiotherapy directed against an epithelial tumor. So characteristic was the rate of regression that the assumption of carcinoma of the pancreas had to be discarded, it was obvious that the patient was suffering from lymphoblastoma, probably beginning in the retroperitoneal nodes. If, at the beginning of his illness, the symptoms had been due to carcinoma, it is hardly likely that he could have lived five years. On the other hand, the initial response of the abdominal tumor to irradiation, and later the appearance of lymphadenopathy in the neck, axillae, groins and even the mediastinum, clearly showed that the process was lymphoblastomatous and not carcinomatous and confirmed the indications furnished by radiotherapy, which in this case could not be reconciled with the pathologic diagnosis of carcinoma.

CASE 2—A woman, aged 37, who registered at the clinic, Feb. 13, 1933, had noted the onset of urticaria, pain around the posterior aspect of the right hip, radiating down the right lower extremity, and a sense of pressure in the back and around the rectum, six or eight weeks before. A gynecologist had inserted a pessary which the patient was still wearing. Another physician had injected varicose veins around the anterior aspect of the right thigh. Four weeks after the onset of symptoms (four weeks before her registration at the clinic), a mass had been found in the epigastric region, and the patient had been subjected to an exploratory laparotomy which had disclosed a tumor infiltrating the mesentery. A specimen obtained by the surgeon was submitted to pathologists, who accurately interpreted the tissue as lymphosarcoma.

Between Feb. 13 and Feb. 21, 1933, roentgen treatment to the upper half of the abdomen was followed by rapid regression of the abdominal masses and by corresponding improvement in

the patient's condition. The rate of regression was absolutely characteristic of lymphosarcoma. A second course of treatment between April 17 and April 20, 1933, was followed by additional and equally rapid improvement. By March 14, 1933, the abdominal lymphadenopathy had diminished 60 per cent in size, and the patient's symptoms had completely disappeared.

This case is cited merely to show that the diagnosis could have been arrived at with equal accuracy without operation, merely by exposing the abdomen to roentgen rays in the proper manner. Irrespective of the pathologist's report, the history pointed to retroperitoneal lymphadenopathy as the cause of the patient's symptoms. If the physicians who had examined her previously had had experience with radiotherapy, the operation to which the patient had been subjected would not have been necessary. Exposure of the upper two thirds of the abdomen to roentgen rays of medium wavelength, through two anterior and two posterior fields, with the four beams of rays converging on the prevertebral nodes, would have been sufficient to establish the diagnosis within two weeks.

CASE 3—A woman aged 56, who registered at the clinic, March 1, 1933 had been well until three years previously when she had noticed, in the epigastrium, a mass the size of a large orange. Her impression was that the size of the tumor had remained about the same for six months or longer and the growth then gradually disappeared. In the fall of 1932 the epigastric tumor reappeared and gradually increased in size. Also the abdomen became more and more distended. During the few weeks prior to her coming to the clinic the epigastric mass had grown rapidly, had caused pressure symptoms and had been accompanied by shortness of breath, but at no time had the patient suffered from pain.

The abdomen was moderately distended and contained fairly large softish masses in the epigastric and umbilical regions as well as in the left iliac region. The peritoneal cavity and both pleural cavities contained a small quantity of fluid. March 3, 1933, a diagnostic aspiration of the right pleural cavity was performed, and 1250 cc of thick milky fluid was withdrawn. Some of the fluid was used for culture, some for guinea pig inoculation, and some for determination of chyle. Evidence of tuberculosis could not be obtained, but it was definitely established that the fluid was chylous in character.

A course of roentgen treatment was given to the upper two thirds of the abdomen and to the entire thorax between March 6 and March 14, 1933. This caused rapid regression of the abdominal masses and equally rapid diminution in the intrathoracic fluid. The cough and dyspnea also subsided rapidly. The rate of regression was exactly what would be expected in lymphoblastoma and thus confirmed the clinical impression. Regression of the abdominal tumors continued during the ensuing few weeks and all the patient's symptoms disappeared.

In spite of the circumstances mentioned, the general condition of the patient throughout her illness had remained relatively good, especially if the duration of the illness and the physical observations were taken into account. The patient's impression that the abdominal tumor had disappeared spontaneously about six months after its initial appearance must not be taken literally but merely indicates that the mass or masses diminished in size sufficiently to give the patient the impression that they had vanished. It is well known that certain varieties of tumor vary in size from time to time, and sometimes such variations are sufficient to give a patient the impression that the tumor has disappeared when it actually has not. Clinically, it seemed obvious that the pathologic process had started in the para-aortic lymph nodes around the celiac axis, just below the mouth of the thoracic duct, through which it had extended upward and had blocked the duct in the thoracic portion of the posterior mediastinum, causing

chylous fluid to accumulate in both pleural cavities. Under the circumstances, the natural assumption was that the patient had lymphoblastoma. If radiotherapy had not been used for differential diagnosis in this case, it is possible that the patient would sooner or later have been subjected to an operation, which would have been essentially useless as far as the patient was concerned.

In contrast with different forms of lymphoblastoma, tuberculous processes respond much more slowly to irradiation, and complete regression usually requires that the affected region be exposed to the rays at regular intervals for from three to twelve months, or even longer. The difference in radiosensitivity between lymphoblastomatous adenopathy and tuberculous adenitis is so great as to leave no room for doubt. Significant and valuable as this point may be in relation to enlarged nodes in superficial parts, such as the neck, it is of still greater value when the enlarged nodes are situated in the mediastinum, where the clinical features tend to be less distinctive and where a biopsy cannot help the clinician out of his dilemma. The following is a case in point.

CASE 4—A woman aged 53, who registered at the clinic, March 8, 1928, had noticed for six or seven years that her heart missed an occasional beat at night and that this interfered with sleep. Thenceforth she had attacks of vertigo and fatigue, from which she could obtain relief only by lying down. Her pulse rate had been more or less steadily elevated, but electrocardiographic examinations in 1927 had not disclosed any definite disturbance in the cardiac rhythm. During the month preceding registration the right side of the neck had swelled and become sore and a slightly enlarged node adjacent to the right sternomastoid muscle had become palpable. This was accompanied by occasional soreness on the right side of the neck. It seemed most likely that, since the tonsils and one tooth had been infected for some time previously, the slight cervical adenitis might have resulted from such infection. Accordingly, she was advised to have the tonsils removed and the tooth extracted. Tonsillectomy was performed April 4, 1928 and these glands showed chronic inflammation, fibrosis, pus and ulceration in the crypts. Subsequently the soreness on the right side of the neck increased, the enlarged nodes on this side did not recede, and other nodes on the same side also enlarged.

May 21, 1931 pus was evacuated from some of the enlarged nodes on the right side of the neck were removed surgically, and microscopic examination showed these nodes to be tuberculous. A roentgenogram of the thorax May 18, 1931 showed circumscribed broadening of the upper mediastinal shadow. This was assumed to be due to enlarged mediastinal lymph nodes and the previous history made it seem likely that these nodes were tuberculous. On this assumption roentgen treatment was instituted, the patient receiving the first course between June 29 and July 1, 1931. The treatment was directed to the mediastinum and to both sides of the neck. A second course of treatment was given between July 27 and July 29. By this time the condition of the patient had improved considerably, the lymph nodes in the neck had almost disappeared and a roentgenogram of the thorax Aug. 24, 1931 showed substantial retrogression of the enlarged mediastinal nodes. Moreover the rate of such regression confirmed the clinical and roentgenologic assumption of tuberculous mediastinal adenitis. Additional courses of treatment were given between Aug. 24 and Aug. 26, Sept. 21 and Sept. 22 and on Dec. 7, 1931, when the roentgenologic appearance of the thorax was normal and the enlarged nodes in the right side of the neck had disappeared. The patient's condition has been entirely satisfactory since that time. An interesting point also is that the tendency of the heart to miss an occasional beat, the abnormally high pulse rate and the undue tendency to fatigue have disappeared and the patient is well.

In this case it is true the character of the enlarged nodes in the neck made it seem most likely that the mediastinal adenopathy also was tuberculous. Still the

clinical and roentgenologic features were not sufficient to remove all doubt, but the response to irradiation cleared away all uncertainty. Of course, if the tuberculous process in the mediastinal nodes had undergone calcification, radiotherapy could not have had the same effect.

Radiotherapy may also enable one to distinguish embryonal carcinoma and mixed, or teratoid, tumor of the testis, whether in their primary site or in their most common, abdominal or supraclavicular, sites of metastatic dissemination, from other kinds of neoplasm with which they may sometimes be confounded. Being derived from the spermatogonial cells, embryonal carcinoma (not adenocarcinoma) of the testis is just as radiosensitive as the parent cells of the normal testis which rank next to the lymphoid cells and to certain mucus-secreting epithelial cells (salivary glands) in their susceptibility to roentgen rays and radium. The sensitiveness of mixed, or teratoid, tumors is sometimes as great and apparently depends on the proportion of spermatogonial epithelium entering into their composition.

In bone tumors, also, radiotherapy often furnishes invaluable diagnostic indications. As pointed out by Ewing and as I have recently emphasized, the susceptibility of solitary endothelioma of bone to roentgen rays or radium is so pronounced and so characteristic as, by itself, to constitute a most valuable means of differentiation. As a class, bone tumors derived from cartilage are, in respect of their susceptibility to roentgen rays or radium, intermediate between the solitary endothelioma and the osteogenic sarcoma, but the difference between chondrosarcoma and endothelioma is greater than the difference between chondrosarcoma and osteogenic sarcoma. By sufficiently intense irradiation chondrosarcoma can be made to retrogress perceptibly and sometimes to a considerable degree for a limited period of time (weeks or months), but, as in osteogenic sarcoma, complete and permanent disappearance of such a neoplasm is rare. Nevertheless, such retrogression as does occur usually proceeds at a more rapid rate, is more pronounced and lasts somewhat longer than in the osteogenic tumor. In most cases the difference in radiosensitivity between these three types of neoplasm is sufficient to distinguish them clearly irrespective of clinical, roentgenologic and pathologic indications. Of course, when the results of radiotherapy support the clinical, roentgenologic or pathologic observations, the weight of evidence becomes overwhelming.

CASE 5—A boy aged 16 years who registered at the clinic, Dec. 1, 1932, had always been well until four months previously when he noticed a dull, intermittent ache around the anterior aspect of the lower third of the left thigh. Except that while baling hay during the summer he had used this thigh to assist in loading the bales, neither he nor his father recalled any injury to which the pain could be attributed. Gradually the pain had increased in severity and become more constant. At no time had the patient been aware of fever and his weight was normal. During the previous two or three weeks slight swelling of the lower part of the left thigh had become apparent but the color of the overlying skin had remained normal. Walking had not been affected appreciably and the boy had been able to ride a horse for five miles daily on his way to and from school, but running caused the pain to increase. The function of the joints had not been disturbed.

Examination disclosed slight widening of the lower part of the left thigh which measured 15 cm. more than the right thigh, also tenderness and slight limp on walking. Roentgenograms showed diffuse widening of the lower third of the left femur with concentric deposition of new bone in the periosteum and decrease of central density. These features were

regarded as representing solitary diffuse endothelioma (Ewing). Evidence of intrathoracic metastasis could not be found. The "onion skin" appearance of the left femur at the level of the tumor was so classic that even the orthopedic surgeon did not hesitate to regard the tumor as endothelioma. To the surprise of every one, however, microscopic examination by Broders of tissue removed from the tumor, Dec 4, 1931, brought the report of "osteogenic sarcoma (graded 2), differentiating for the most part in the direction of cartilage."

If the tumor should react to irradiation like true osteogenic sarcoma or like chondrosarcoma, the onion skin appearance of the new bone as an indication of endothelioma would have to be disregarded. On the other hand, if the growth should perchance retrogress at the rapid rate so characteristic of Ewing's endothelioma, the pathologic interpretation would have to be revised.

The father having refused to consider amputation between Dec 7 and Dec 9, 1931, the region occupied by the growth was irradiated with six beams of rays of medium wavelength (generated at 135 peak kilovolts and filtered through 6 mm of aluminum). The pain which previously had been rather severe diminished rapidly. The tumor also retrogressed but the rate of regression was that of chondrosarcoma rather than endothelioma. Between Dec 31, 1931, and Jan 2, 1932, the patient was given a second course of treatment. When he returned, February 16, he was free from pain and the tumor had retrogressed further but it was clear that the neoplasm was not an endothelioma. A third course of treatment was given between February 16 and February 17. Roentgenograms April 7, 1932, indicated slow but continued improvement in the condition of the left femur. The patient was allowed to go home without treatment but was instructed to return in three months. Before this interval had elapsed the father wrote that the pain had reappeared and was increasing, and that the lower half of the left thigh was swelling again. Amputation was again advised, but the father again refused to follow this advice. Therefore another (fourth) course of roentgen treatment was given between June 30 and July 1, 1932. The pain abated and the swelling appeared to subside for a short time and roentgenograms, July 21, revealed definite recession of neoplastic activity, but it was obvious that parts of the growth were still active.

When the situation was again discussed with the father he finally consented to amputation which was performed by Dr F. C. Thompson, at St Joseph, Mo. A large specimen of the tumor from the amputated limb, furnished by Dr Thompson was subjected to microscopic examination by Dr Broders, who described the growth as follows: "This neoplasm, which is of a low grade 2 malignancy, belongs to the general class of osteogenic sarcoma, however, while there is some tendency to bone formation, its cells for the most part are differentiating into cartilage of a more or less atypical nature. In the undifferentiated areas, one sees practically normal cartilage cells, however, in these areas also there are a few cells with large, irregular, hyperchromatic nuclei and in which the amount of cytoplasm is abnormally large."

The significant points are that a tumor of the femur, with features apparently so characteristic of the solitary diffuse endothelioma described by Ewing, should have failed to react to roentgen rays in the manner and at the rate peculiar to tumors of this kind, that its radiotherapeutic behavior and its pathologic features should so absolutely and conclusively have concurred in establishing its essentially cartilaginous character, and that in this case, as perhaps in other cases, the laminar deposition of new bone in the outer layers of the neoplasm, or so-called onion-skin effect, should have proved unreliable and actually misleading as a diagnostic sign. The response of the tumor to repeated and intense roentgenization corresponded in all respects to the usual reaction of malignant tumors derived from cartilage, distinctly more radiosensitive than true osteogenic sar-

coma and much less sensitive than Ewing's solitary endothelioma, it furnishes additional evidence, if such were needed of the great value of irradiation as a means of distinguishing different varieties of tumors.

If space were available, many other examples of the practical value of radiotherapy as a means of identifying certain varieties of tumor could be cited. Also if pathologists and others were familiar with the relative radiosensitiveness of different kinds of cells, such knowledge would undoubtedly furnish data that would prove significant for purposes of classification. Indeed it is safe to say that, as internists, surgeons and radiologists acquire experience and become familiar with the relative radiosensitiveness of neoplasms, there may be a tendency toward excessive dependence on the method. Also it is certain that when a greater number of pathologists come to realize the significance of the specific range of sensitiveness of different varieties of cells, this fundamental law may help to solve certain problems in cellular physiology, histology and pathology which until now have remained insoluble.

ABSTRACT OF DISCUSSION

DR NOBERT ENZER Milwaukee. It is not appreciated often enough that the submission of a small piece of tissue to the pathologist places on him a considerable responsibility. The pleomorphism of tumors is perhaps the greatest danger. The classification has been rather confusing and an understanding of the primary cell origin is needed. Cells may be and indeed are multipotential and develop different types of tissue under different stimuli. For example, lymphoblastomas and connective tissue tumors are derived from mesenchyme. It is important that the purely descriptive form of classification be discarded. As Dr Desjardins mentioned it is important that physicians learn to separate the granulomas that have peculiar features clinically resembling neoplasms but pleomorphic in their cell structure. Such lesions probably do not take origin from a single stem cell. I am referring particularly to Hodgkin's granuloma. In the interpretation of x-ray sensitivities a differentiation should be made between tumors that are unicentric, if I may use the term, or local in origin as opposed to those which are polycentric or systemic in origin. I am referring to certain types of lymphoblastoma that arise spontaneously in several depots in the body, as opposed to lymphoblastomas that arise, for example in the cervical region or other lymphoid depots. While sarcoma of the testes does occur the great majority of malignant tumors of the testes are embryonal carcinomas. Such tumors take origin from primitive germ layers. Sarcoma of the testicle is usually a lymphosarcoma. It is possible that these tumors take origin in primitive mesenchyme in which the lymphogenic tissue is abnormally stimulated or developed. In other words, these tumors, sarcoma of the testes while morphologically lymphogenous, may in reality be properly classified as embryonal carcinomas.

DR A. U. DESJARDINS Rochester, Minn. I am very grateful to Dr Enzer for his remarks. I should be the last man to cast aspersions on the pathologist. What I meant to bring out was that the radiosensitiveness of tumors is becoming a valuable point in diagnosis but on condition that the interpretation is done by some one who not only has had adequate experience but whose mind has been focused on this particular point long enough to develop assurance. I realize the danger of any one without sufficient experience and without having his mind specifically on the point attempting to do it because not only will he get into trouble but he will get others into trouble, including the patient. So far as the diagnostic value is concerned radiotherapy has both a positive and a negative value and therefore a double value, because it enables one not only to recognize a suspected lymphoid tumor but also to exclude other tumors when a lymphoid tumor is suspected and vice versa. As applied to tumors of bone, radiotherapy makes it possible to distinguish endothelioma from chondrosarcoma and also chondrosarcoma from osteogenic sarcoma. In an occasional case special difficulties may be encountered but these are exceptional.

RELATIVE MERITS OF SPINAL AND
ETHER ANESTHESIAHAROLD L FOSS, MD
AND
LESLIE J SCHWALM, MD
DANVILLE, PA

Surgery involves many controversial subjects which add interest to medical discussions and zest to meetings whenever doctors get together. Spinal anesthesia is a recent example, for no method has had stronger partisans ready to defend, on the one hand, or to condemn, on the other. As has been the case with most surgeons, we have been greatly interested in the question of the relative merits of this anesthetic and anxious to know the truth of the matter. On finding recently that sufficient material from which to draw conclusions had accumulated in our own clinic, we attempted to determine the nature of our own results. With no analysis having been made at the time and, therefore, without bias, we offered to read a paper entitled "The Relative Merits of Spinal and Ether Anesthesia" before this section and so, with an open mind and with no attempt at prophesying what our conclusions would be, we set about making a comparative study of the results following the use of the two forms of anesthesia, ether and spinal, in a series of operations performed under closely similar conditions.

It was with a sincere desire to determine the actual facts pertaining to the relative safety of spinal and ether anesthetics and with a resolve to steer a middle course between immeasurable enthusiasm, on the one hand, and unjustified condemnation, on the other, and to rely only on carefully collected data, that the study was made. The investigation was carried out on a series of major procedures all performed by one of us (H L F), except for a few performed by an assistant, in the same hospital and operating room and with the same personnel, 4,000 consecutive operations were performed, one half under ether anesthesia and the remaining half under spinal anesthesia. By ether anesthesia we refer to ether, or ether plus nitrous oxide or ethylene, but in which no spinal anesthesia is used, by spinal anesthesia, subarachnoid injection of procaine hydrochloride supplemented in a few cases by nitrous oxide and ethylene. Every anesthetic was administered by one of three trained anesthetists who had devoted many years exclusively to this work and who, therefore, were experienced and skilled. We have not resorted to spinal anesthesia in closed fracture reduction, hence, no such cases are included, while such procedures as cystoscopic examinations and other similar minor procedures, occasionally performed under spinal anesthesia are, of course, not listed. All the procedures herein described come well within the category of major operations (table 1).

The operations whether with ether or spinal anesthesia, were all consecutive and were all performed on structures below the diaphragm. Since the types of operation and the lesions for which they were performed were about equally divided between the two anesthetic methods the study is fair and comparable. It seemed therefore, that a review of the anesthetic results, the patient's reaction and condition during and after the procedure with especially, a comparative

analysis of the mortality figures in these two closely paralleled lists of operations, would cast an interesting light on the relative merits, advantages and dangers of the two anesthetic agents.

Safety in an anesthetic, as all will agree, is of the first importance, and while we appreciated the manifold advantages of spinal anesthesia, yet we realized that it possessed certain inherent dangers. How great were these dangers? Were they actually greater than those possessed by ether and, if so, in what degree, and were they of sufficient moment to contraindicate our continuance of this method of producing insensibility to pain? These questions first arose when, after several hundred spinal anesthetics, we had a sudden and inexplicable death occurring several days postoperatively. Because of this fact, for a time, spinal anesthesia was discontinued when, most unexpectedly another death occurred, but this time with ether, a death equally difficult to account for. This recalled to mind Lundy's¹ careful analysis of a large series of operations under ether, performed at the Mayo Clinic, which clearly showed that even accompanying ether there is, not infrequently, a concealed and delayed mortality, a fact often disregarded, especially by those who are opposed to spinal anesthesia. It has been our

TABLE 1—Classification of 4000 Operations Under Ether and Spinal Anesthesia

Operations	Ether	Spinal
Amputations	26	29
Appendectomies	458	449
Exploratory laparotomies (chiefly for carcinoma)	123	103
Herniorrhaphies	217	281
Operations on bones and joints	29	21
Operations on gallbladder and ducts	366	210
Operations on kidney bladder and prostate	50	115
Operations on pelvis	417	412
Operations on stomach and intestines	155	230
Open reduction of fractures	27	23
Splenectomies	4	2
Miscellaneous	70	60
Total	2 000	2 000

observation, as it has been Pemberton's,² that there is a tendency for the surgeon to attribute to the anesthetic or its mode of administration any unusual complication which cannot readily be accounted for otherwise."

In our experience an occasional remote death, occurring a week or two postoperatively and in certain cases, impossible to understand, occurred following spinal anesthesia, but, as has been stated, they also occurred following the use of ether. As some one has said, it is our business to see that our patients leave not only the operating room alive but the hospital as well, and the patient is just as dead when he dies three weeks postoperatively as he is when he dies on the operating table. Much of the extensive literature on the subject was read, but it finally appeared that no personal conclusions could be drawn, in spite of the widespread claims for and against spinal anesthesia until a sufficient number of patients had been operated on in our own clinic and the results carefully analyzed.

Although spinal anesthesia greatly facilitates the work of the surgeon the question arises. Does this most desirable advantage offset the anesthetic's alleged dangers if dangers it has, and should the method be reserved only for those cases in which technical facility

From the Department of Surgery, Geisinger Memorial Hospital.
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¹ Lundy, J. S. Incidence of Pulmonary Complications Following
Ether and Ethylene Ether Anesthesia for Surgical Procedures in the
Upper Abdomen. *N. Y. J. Surg.* 124: 87-93 (July) 1926.

² Pemberton, J. de J. *Proc. Soc. Staff Meet., Mayo Clinic* 8: 305
(May 17) 1935.

is of transcendent importance? Can it with safety, comparable to that of inhalation anesthesia, be used more or less as a routine measure in operations below the level of the diaphragm? If this is true, but few of us who have had much experience with spinal anesthesia would wish to use anything else, so satisfactory is it. And so it was with these and many other closely associated questions in mind that the study was undertaken.

The mortality figures for the series do not, of course, represent those of our surgical service as a whole, they are considerably higher, as should be made clear, owing to the fact that all the serious abdominal operations are included, and the operations performed on the thorax, head and neck, when the anesthetic has been local or gas or a combination of these, and operations carrying lower mortality figures than the more formidable operations in the abdomen are excluded. Moreover, in a medical center serving a widespread rural territory, it is obvious that surgical disease is of a more serious nature when first seen at the hospital than in the city institutions where physicians' offices and hospital dispensaries are readily accessible and where the patient becomes accustomed to resorting to them promptly. The rural patient is apt to keep his complaints long to himself until finally driven to seek relief, this fact having been noted by all who work in clinics serving far-flung rural sections. As an illustration a fifteen years' average shows that our patients with acute appendicitis are admitted seventy-two hours after the onset of symptoms, patients with carcinoma of the colon, thirteen months after. These points are merely made in extenuation, if it is necessary, for the mortality figures appearing in the paper.

POSTOPERATIVE DEATHS WITH SPINAL ANESTHESIA

Authors writing in defense of spinal anesthesia have frequently stated that they have had no deaths which, to use their expression, "by the widest stretch of the imagination, could be attributed to spinal anesthesia",

TABLE 2—Mortality in 1,000 Operations

2,000 Consecutive Operations under Spinal Anesthesia			
Deaths	140		
Mortality	7%		
Deaths in operating room	1		
Percentage of deaths under spinal anesthesia in the operating room to total deaths under spinal anesthesia	0.71%		
2,600 Consecutive Operations under Ether Anesthesia			
Deaths	137		
Mortality	6.8%		
Deaths in operating room	10		
Percentage of deaths under ether anesthesia in operating room to total deaths under ether anesthesia	7.3%		
		Spinal Series	Ether Series
Final Corrected Mortality			
Note: Ten patients having had spinal anesthesia died subsequent to secondary operations performed under nitrous oxide ethylene etc. With these eliminated the mortality stands			
		6.5%	6.8%

or that there were "no deaths for which the anesthetic could possibly be blamed" or that "in a series of one thousand cases there was but one death the result of the anesthetic." Almost invariably, because they fail to list all their deaths they afford the reader no opportunity to draw his own conclusions. Such methods of case reporting are incomplete and occasionally, misleading. This fact being recognized and also realizing that deaths occurring several days following the administration of an anesthetic may rightfully be attributed to an untoward action of it, we recorded every death occurring in the hospital, it being the only fair and

unbiased way of arriving at a true appraisal of the relative safety of the two anesthetics under consideration (table 2).

In 1,875 cases, Sise³ reported 4 deaths occurring on the operating table within one hour of the injection of a spinal anesthetic but called attention to the undeniable fact that sudden fatalities have occurred in many instances following the use of ether as well. Muller and Overholt⁴ reported 2 sudden deaths soon after

TABLE 3—Ratio of Deaths Following Ether Anesthesia to Those Following Spinal Anesthesia*

	Spinal 1	Ether 10
In operating room		
Deaths in twelve hour periods for first three days post operatively		
1st 12 hours	7	91
2d 12 hours	9	6
3d 12 hours	11	9
4th 12 hours	10	10
5th 12 hours	4	1
6th 12 hours	9	2
Total	46	3
At end of first five days		
Deaths in five day periods		
1 to 5 days	61	8
6 to 10 days	27	6
11 to 15 days	10	13
16 to 20 days	7	11
21+ days	20	12
Total	140	131

*Two thousand operations under ether anesthesia in 2,000 operations under spinal anesthesia in

operation in 533 cases 1 occurring on the operating table. In McKittrick, McClure and Sweet's⁵ series of 338 patients there were 40 deaths a mortality of 11.8 per cent 1 death only being attributed to spinal anesthesia, yet there were 6 unexplained sudden deaths all occurring in the first forty-eight hours. In none of these was the fall of blood pressure remarkable.

Undoubtedly many deaths attributed to other causes have occurred from the use of the anesthetic but it is equally true that many deaths have been falsely attributed to spinal anesthesia and in many of these cases postmortem examinations showed that conditions were present which would have caused the patient's death irrespective of the anesthetic used. We believe however, with Bower and his associates⁶ "that the death of a patient whose blood pressure drops more than 50 per cent or who develops respiratory embarrassment within twenty minutes following the injection and who does not react to within 25 per cent of the normal before the operation is finished and subsequently develops secondary shock and dies is an anesthetic death whether on the operating table or in the recovery room."

Not only must respiratory paralysis be guarded against, but when the anesthetic reaches the fifth or sixth thoracic nerves, especially if in a relatively high concentration and particularly with patients with damaged myocardium death from two to six days following the operation may occur and may seem difficult to explain. We believe however, that spinal anesthesia has been too frequently used in unskilled hands.

- 3 Sise L F Spinal Anesthesia for Abdominal Operations New York State J Med 29 1182 (Oct 1) 1929
 4 Muller G P and Overholt R H Spinal Anesthesia Ann Surg 94 738 750 (Oct) 1931
 5 McKittrick L S McClure W L and Sweet R H Spinal Anesthesia in Abdominal Surgery Surg Gynec & Obst 52 898 919 (April) 1931
 6 Bower J O Clark J H and Burns J C Spinal Anesthesia J A M A 100 245 (Jan 28) 1933

and that this fact accounts for most of the unfortunate results so often reported. However, in our studies, the mortality rate in our hospital was no greater with spinal anesthesia than with ether, deaths in the first, second, third, fourth and fifth day periods being considerably greater in number in the series in which ether anesthesia was used (table 3).

PERSONAL PREJUDICES

Surgeons have been too greatly influenced by strongly opinionated authors who, obviously prejudiced, have written either supporting or condemning the use of spinal anesthesia. A host of papers has appeared citing long and fortunate experiences with spinal anesthesia with no deaths "attributable to the anesthetic," a phrase leaving a justifiable doubt in the mind of the reader. Tendler recently presented a tabulation embracing a large variety of technics and drugs and including a series of 6,000 cases of Rastich's with "no

TABLE 4—Deaths in Operating Room

Ten Patients Who Died in Operating Room under Ether Anesthesia (From a Total of 2,000 Consecutive Operations)		
Patient	Age Years	
1 Woman	30	Suturing traumatic rupture of the uterus advanced peritonitis
2 Woman	29	Salpingo oophorectomy cardiorespiratory failure
3 Woman	66	Appendectomy gangrenous appendicitis cardiorespiratory failure peritonitis
4 Man	60	Exploratory laparotomy (chronic cholecystitis and pancreatitis) chronic myocarditis cardiac failure
5 Man	62	Closure—perforated duodenal ulcer generalized peritonitis
6 Woman	26	Exploration—retroperitoneal sarcoma cardiorespiratory failure
7 Man	36	Secondary exploratory laparotomy hemorrhage following gastroenterostomy performed seventeen days previously
8 Woman	29	Salpingectomy—ectopic pregnancy extensive preoperative hemorrhage
9 Man	60	Died of intestinal obstruction before incision could be made
10 Man	10	Open reduction and plating fracture of the femur cardiorespiratory failure

One Patient Who Died in Operating Room Following Spinal Anesthesia (From a Total of 2,000 Consecutive Operations)		
1 Woman	2	Supravaginal hysterectomy and salpingo oophorectomy patient died while fascia was being closed had been given 150 mg. of procaine hydrochloride supplemented by nitrous oxide and ethylene stimulants and artificial respiration administered with no effect autopsy revealed (1) millary tuberculosis (2) chronic myocarditis (3) chronic cholecystitis (4) fatty degeneration of the liver (5) chronic nephritis (6) atheroma of the aorta (7) active pulmonary tuberculosis (8) active tuberculosis of the spleen

deaths", one by McCormack of 5,000 cases with no deaths", one by Gosset and Mounod of 2,000 cases with "no deaths", one by Bambridge a series of 1,065 cases with "no deaths" and one by Labat of 1,000 cases with "no deaths". By this we are led to believe that there were no deaths the authors were willing to attribute to the method; consequently, the personal equation and that psychologic phenomenon of the will to believe render such data of questionable worth.

Per contra innumerable papers have appeared unalterably opposed to spinal anesthesia many of their authors being as was recently the case with a distinguished writer who summarily condemned spinal anesthesia surgeons who have never used it and whose knowledge is therefore entirely second hand. Obviously such opinions are anything but authoritative and are as valueless as those cited in the preceding paragraph.

Tendler M. I. Spinal Anesthesia. *Memphis M. J.* 6:143-152 (July) 1929.
Revan A. D. The Present Status of the Anesthesia Problem. *J. A. M. A.* 9:1530-1536 (Nov. 21) 1931.

DEATH IN THE OPERATING ROOM

While death in the operating room is referred to in many published reports as an accident to be occasionally, possibly frequently, expected when spinal anesthesia is employed, in our series of 2,000 operations performed under spinal anesthesia we witnessed it but once, yet saw it occur ten times with ether anesthesia (table 4). In other words, in this series of 4,000 operations, deaths on the operating table occurred 90 per cent less frequently when the patients were operated on under spinal anesthesia. We may add, all the inhala-

TABLE 5—Operations in Which Death Occurred

Operations	Ether	Spinal
Amputations	2	11
Appendectomies (generalized peritonitis)	23	17
Exploratory laparotomies (chiefly cancer)	35	22
Herniorrhaphies (all strangulated)	6	12
Operations on gallbladder and ducts	19	20
Operations on kidney, bladder and prostate	6	12
Operations on pelvis	11	15
Operations on stomach and intestines	32	30
Open reduction of fracture	1	1
One patient died before incision was made	1	
Splenectomy	1	
Total	137	140

TABLE 6—Spinal Anesthesia in Cases in Which Death Occurred

Procaine Hydrochloride Mg	Cases
200	40
175	1
150	54
120	29
100	5
50	5
?	6
Total	140
Average dose	153 mg

TABLE 7—Cause of Death in 4,000 Operations *

Diagnosis	Ether	Spinal
Abscess liver		1
Atrophy of liver acute yellow	1	
Bronchopneumonia	11	13
Carcinomatosis	20	16
Cirrhosis of liver	1	3
Edema pulmonary	1	
Embolism pulmonary	9	11
Hemorrhage	5	6
Mediastinitis	1	
Myocarditis	19	24
Obstruction intestinal	19	7
Pancreatitis	1	4
Peritonitis	40	42
Psychoses	2	
Septicemia	3	6
Thrombosis mesenteric	2	
Tremia	2	8
Total	137	140
Autopsies	29	65
Autopsy percentage	21.2%	46.4%

* Two thousand performed with spinal anesthesia 2,000 with ether anesthesia.

tion anesthetics were administered by skilled anesthetists and the deaths on the operating table in the ether series occurred during operations on desperately ill or injured patients obviously exceedingly bad risks. There were however as many equally unpromising patients operated on under spinal anesthesia, with the marked decrease in mortality referred to previously, a strong argument at least in our experience, for spinal anesthesia and for its use in certain cases in which the patient is a bad operative risk. Operations following which death occurred are listed in table 5, and the

dosage of procaine hydrochloride in table 6 The cause of all deaths in the hospital both with spinal anesthesia and with ether is shown in table 7

We are passing through a period of widespread lack of understanding regarding spinal anesthesia largely due to the lack of a standardized method and a perfected technic Dill⁹ recently inquired

What is the best drug to use? Novocaine, neocaine, spinocaine, tutocaine, nupercaine, stovaine, apothesine? Should the solution be heavy or light, ready made or extemporized with the patient's own spinal fluid? Should it be injected with much, little or no barbotage, slowly or rapidly? Should the patient sit up or lie down for the injection? Some carefully measure the spinal pressure, tilt the table according to the tiltometer, inject adrenalin, ephedrine or caffeine, before, during or after Others care for none of these Some claim that adrenalin and ephedrine are not only useless, but even harmful Koster and Labat, to forestall cerebral anemia, insist upon the Trendelenburg position Evans recommends raising the shoulders on two pillows to forestall diffusion cephalad Most would not apply it to operations above the diaphragm, others apply it to the head, neck and thorax as well How should we gauge the dose? Some say by body weight, others say by size of the spinal canal and the amount of spinal fluid, and estimate the amount by "experience" Is the height of analgesia controlled by volume of spinal fluid aspirated and reinjected, dose of drug, or injection time? May deny that there is any control

Briefly, we would answer these questions by saying that procaine hydrochloride is the best drug to use It should be dissolved in an ampule in the patient's spinal fluid, then injected slowly, with some barbotage, depending on the extensiveness of the anesthesia desired The patient should be sitting up or lying on his side while the injection is being made, and placed in the horizontal position thereafter or in the Trendelenburg position if the surgeon is to operate in the pelvis The dose

TABLE 8—Dosage of Procaine Hydrochloride in 2,000 Operations Under Spinal Anesthesia

Procaine Hydrochloride Mg	Cases
250	1
200	316
175	1
150	632
120	646
100	198
90	2
80	2
75	13
65	1
60	6
50	163
40	2
35	1
30	1
25	3
20	1
?	12
Total	2,000
Average dose	133.71 mg

should range from 25 to 200 mg, but only occasionally the latter (table 8) Tilting the table a few degrees one way or the other is of no especial assistance Epinephrine and ephedrine are helpful Operations should be confined to structures below the diaphragm We agree with Stout¹⁰ and with McKittrick and his associates¹¹ that the level of anesthesia depends largely on the amount of fluid used to dissolve the crystals, and that the position of the patient, if fairly large dilutions are used, has but little to do with it We also feel that, after the first few minutes, the level cannot be changed

No one will deny that spinal anesthesia greatly facilitates the work of the surgeon but, also, from the personal point of view of most patients, the method possesses distinct advantages, as is shown in table 9

PULMONARY COMPLICATIONS

In every essay on spinal anesthesia the question of postoperative pulmonary complications invariably appears Campbell¹¹ stated that such conditions are several times more frequent under inhalation anes-

TABLE 9—Replies to a Follow-Up Questionnaire Sent to 500 Consecutive Patients Given Spinal Anesthesia

Have You Ever Had Ether?	
Yes	185
No	217
Gas	1
Question unanswered	3
Total	406
If You Were to be Operated on Again Would You Choose Spinal or Ether?	
Spinal	335
Ether	48
Questionable	23
Total	406

thesia, yet many have reported a greater incidence with spinal anesthesia Our experience, as well as that of many writers, suggests an incidence about equal with the two forms, possibly even greater with spinal anesthesia, and this result coincides with that of McKittrick, McClure and Sweet who compared the pulmonary complications in two surgical series, one in which spinal anesthesia was used and the other inhalations

It seems, therefore, that we cannot hope to reduce the incidence of postoperative pulmonary complications by using spinal anesthesia, however great some of its advantages in other directions may be Many authors have reported a higher incidence of these conditions and, especially, postoperative pulmonary atelectasis, including Brown and Debenham,¹² Foss and Kupp,¹³ and Muller and Overholt⁴ The inhibition of the force and depth of respirations with a resulting increased difficulty of ridding the bronchial tree of foreign matter or secretions probably accounts for this In this series, however, there were 11 deaths from pneumonia in 137 deaths following ether and but 13 from pneumonia in 140 deaths following spinal anesthesia

SPINAL ANESTHESIA IN ACUTE ABDOMINAL EMERGENCIES

With certain conditions it seemed that spinal anesthesia is definitely helpful in reducing the mortality rate In our first 400 operations for acute appendicitis performed under spinal anesthesia, the mortality was exactly 33 per cent less than that in the preceding 400 operations performed under ether The series may be too small to be significant, but as similar reductions invariably occurred in operations for perforated ulcer, for strangulated hernia and for acute intestinal obstruction, we were convinced that, at least with acute abdominal emergencies, the far greater ease and celerity with which the operation can be performed clearly exerts a positive influence in reducing the operative mortality

11 Campbell M F Spinal Anesthesia in 1520 Urological Operations J Urol 24 279 (Sept.) 1930
12 Brown A L and Debenham M W Postoperative Pulmonary Complications Study of Their Relative Incidence Following Inhalation Anesthesia and Spinal Anesthesia J A M A 99 209 and 210 (July 16) 1932
13 Foss H L and Kupp John Respiratory Complications and the Surgical Patient Surg Gynec & Obst 51 798 804 (Dec.) 1930

9 Dill W W Statistical and Other Observations on Spinal Anesthesia Pennsylvania M J 35 244 246 (Jan.) 1932
10 Stout R B Spinal Anesthesia, Volume Control Technic Am J Surg 7 57 66 (July.) 1929

EFFECTS ON THE SPINAL CORD AND
MENINGES

Since surgeons first began using spinal anesthesia there have been speculations as to the effect of the drugs used on the spinal cord and meninges Spielmeier,¹⁴ in 1908, produced, experimentally, peripheral degeneration of the myelin in the lateral, anterior and posterior columns of the spinal cord without changes in the nerve roots or nerve cells Lundy recently produced the same change by using huge doses of procaine hydrochloride Transient lesions of the spinal cord have been reported by Davis, Haven, Givens and Emmett¹⁵

In the 2,000 cases studied by us and in nearly 1,000 injections made since the material for this paper was gathered, we have never seen the slightest evidence of peripheral neuritis or sensory or motor disturbances We have never seen a case of foot drop or have had patients who suffered from pain in the body or in the legs following spinal anesthesia

Lundy, in a personal communication, stated that at the Mayo Clinic they have never noticed that sterile procaine hydrochloride, administered by the usual technic and in safe doses, has produced any serious changes in the spinal cord

CONCLUSIONS

1 Mortality figures, based on all deaths in the hospital following 4,000 consecutive major operations, one half performed under spinal anesthesia and one half under ether, have been studied

2 Deaths in the operating room, as has frequently been alleged, are by no means more frequent with spinal anesthesia than with ether In fact, in this series, they were far commoner with ether, in a proportion of 10 to 1

3 Postoperative deaths occurring in the first few days following operation are not, as is frequently claimed, more common after spinal anesthesia In this study the reverse was true, ether carrying a much higher mortality rate

4 The ultimate death rate in the hospital is practically the same following the administration of the two anesthetics In this series of 4,000 closely parallel operations the difference was only 0.15 per cent

5 While pulmonary complications are no less common following spinal anesthesia, there is not a noteworthy increase in the incidence of pulmonary deaths when this anesthetic is used over those occurring following the administration of ether In this series the number of deaths due to postoperative pulmonary complications was practically equal with the two methods

6 Spinal anesthesia can be used more or less as a routine measure in operations below the diaphragm with far greater relative safety than most surgeons at present seem to believe It is the anesthetic, *par excellence*, in most acute abdominal emergencies, acute appendicitis, intestinal obstruction and perforated ulcer

7 A large number of papers have been written opposed to, or in support of, spinal anesthesia and contain conclusions which are based on unsupported opinions rather than on a thorough, comparative analysis of hospital morbidity and mortality and, therefore, are not only far from being helpful but have been, frequently, misleading

8 There is some evidence to suggest that certain changes in the spinal cord may follow the injection of procaine hydrochloride into the subarachnoid space, but we are yet to learn whether or not this is common, is permanent or is of any especial significance, provided an aseptic and proper technic is observed

9 Improvements in technic have rendered the use of spinal anesthesia as safe as the use of ether anesthesia, and, in most instances, it is infinitely more convenient and helpful and followed by fewer complications

10 The majority of patients prefer spinal anesthesia, this being especially true with those who have had both spinal and ether anesthesia

11 Nothing in this study has suggested that postoperative complications of any importance, either early or remote, are any more frequent following spinal anesthesia than following any form of inhalation anesthesia We agree with Pemberton,² who said "I have never seen a serious complication as the result of the administration of spinal anesthesia as used in the Mayo Clinic"

12 No anesthetic is without certain inherent dangers, but merely because spinal anesthesia is a new anesthetic method, one should not be too appalled when an unexpected and untoward result occurs following its employment and be too unreasonable in condemnation of the method, at least until a careful review is made of the results obtained with ether, the occasional, yet inevitable, complications associated with which have, through long familiarity, been too largely disregarded

ABSTRACT OF DISCUSSION

DR JOHN S LUNDY, Rochester, Minn It does not seem to me that these results can be entirely related to the anesthetic agent or to the method of its administration The authors have stated that many of these patients were moribund when they were brought to the operating room In that case I doubt whether I would have chosen either the drop method or spinal anesthesia I do not know just what the arrangement of the authors is for supervision of the department of anesthesia, but I find that, if anesthesia by ether is to be satisfactory in a large group of cases, it will be necessary to provide an artificial airway for some patients Magill's large-bore smooth, soft rubber intratracheal catheter is very useful In a few cases it will be necessary to aspirate material from the trachea before the patient leaves the operating room If all the facilities are not available for caring for the occasional patient who does not take well an anesthetic such as ether, the morbidity rate will be increased over that of the group of patients who have available to them all the facilities for making anesthesia smooth If the morbidity is increased the probability is that mortality will be increased, for the group in which there is morbidity includes all who die, and there is a rather high percentage of deaths in cases in which grave postoperative complications develop Therefore it will be necessary to provide means for avoiding postoperative complications in order to reduce the mortality rate The paper is an eloquent plea for the use of modern methods and agents in anesthesia I believe that spinal anesthesia, ether anesthesia, or any other anesthetic agent or method should not be used as a routine Anesthetists now have a large choice of agents and methods The patient should have that agent and method carefully selected so that as many as possible of the postoperative complications may be avoided which will probably develop if a routine method has been adopted

DR. GEORGE W CRILE, Cleveland The authors have presented an admirable analysis of the problem of anesthesia and have made clear that accurate data and sound thinking are required to reach safe conclusions I recall a front line hospital in France in 1917 where in the same operating theater, ether anesthesia nitrous oxide anesthesia and spinal anesthesia were used The contrasts in the mortality from amputations of the thigh performed with these different anesthesia methods

14 Spielmeier W Veränderungen des Nervensystems nach Stovainanästhesie München med Wchnchr 55 1629 1634 (Aug 4) 1908
Endostemerkrankungen des Rückenmarkes nach Stovainanästhesie
Neurol Centralbl 24 (950) 1909
15 Davis Local Haven Hale Givens J H and Emmett John
Effects of Spinal Anesthetics on the Spinal Cord and Its Membranes
An Experimental Study A M A J 6 181 1783 (Dec 12) 1931

were clear cut and striking. Of a hundred soldiers subjected to amputation of the thigh, performed under ether anesthesia, sixty-six died and thirty-four lived. Under spinal anesthesia, approximately twenty died and eighty lived. Under nitrous oxide, approximately twenty died and eighty lived. Dr. T. E. Jones of the Cleveland Clinic, in his personal experience in ninety-eight cases of one-stage abdominoperineal resections for cancer, reports that under spinal anesthesia the mortality rate was 12 per cent, in contrast to more than twice that mortality rate under ether anesthesia. Miss Hodgins and her group at Lakeside Hospital and Miss Adams and her group at the Cleveland Clinic Hospital have administered 112,000 gas-oxygen anesthetics to white patients with only three anesthetic deaths, or a mortality rate of 1 to 37,000. This series includes straight nitrous oxide anesthesia, nitrous oxide with local and regional anesthesia, and nitrous oxide and ether combined. Such a series presupposes a high order of training on the part of the anesthesiologists. In this series all the anesthetics were administered by highly trained nurse anesthetists. A small, separate series of Negro patients, however, shows four deaths, the obvious conclusion being that only the most experienced and the most skilled anesthetists should administer nitrous oxide to a Negro patient. The principle is established that nerve blocking involves every type of block anesthesia from mere local anesthesia to spinal anesthesia, as the only complete protection against shock. Gas-oxygen anesthesia, for a still unknown chemical reason, is equally a protection against shock. In many abdominal operations, gas-oxygen anesthesia fails to give the necessary relaxation, therefore, ethylene ether or spinal anesthesia is used. Spinal anesthesia carrying the highest anesthetic mortality should not be used in trivial or minor operations or in operations that have no shock mortality. On the other hand, as a rule, inhalation anesthesia should not be used in the major shock-producing operations. When shock per se is the paramount risk, spinal anesthesia should be used, when the anesthesia per se is the remaining risk, spinal anesthesia should be avoided.

THE PRESENT STATUS OF ETHYLENE

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March 12, 1933,¹ marked the tenth anniversary of the introduction of ethylene in the anesthetic field, and it seems a fitting time to discuss its merits, demerits, and general application in surgery.

In order to determine the present status of this agent, a questionnaire was sent to the leading anesthetists of the United States, Canada and foreign countries. The questionnaires were sent to anesthetists rather than to surgeons because it was thought that the attitude of the surgeon would be reflected in the answers of the anesthetists, as well as their own opinion. This supposition proved to be correct. An opinion based on this survey seems justifiable. One thousand questionnaires were sent out. A few were returned because of deaths or improper addresses. Five hundred and thirty-four replies were received. Two hundred and twenty were using ethylene and 314 were not using it. Ethylene was administered alone 737,815 times and combined with ether for varying periods 267,560 times, making the total of recorded ethylene anesthesia 1,005,375. Many anesthetists who were unable to give the number of ethylene anesthetics they had administered, because records were not kept, stated that several thousand, or from 70 to 80 per cent of all anesthetics, were with ethylene.

There were no explosions or deaths recorded by this group.

The various odors of ethylene are due to impurities and the administration of such ethylene may be accompanied by nausea, gagging, vomiting and more or less cyanosis. Impure ethylene usually produces an accumulation of yellow oily material in the machine connections. Since these objectionable features have been nearly eliminated by the reliable expert manufacturers, it is a rare occasion to have a patient refer to or object to the odor.

Ethylene is not unpleasant to inhale if it is administered slowly, with a liberal amount of oxygen during induction of the anesthesia.

The administration of nitrous oxide before ethylene is not practiced in the Presbyterian Hospital of Chicago because, as stated before, pure ethylene is not unpleasant if properly given and because of the feeling that a combination of the two gases on the same machine and in a patient's lungs may not be safe. So strong is this belief that we have separate gas machines for ethylene and for nitrous oxide, in other words, tanks of the two gases are never on the same carriage. The decision is made before operating as to which gas is to be used, and then its administration is continued throughout the operation unless a change to ether becomes desirable.

After an extensive experience with local analgesia, chloroform ether and nitrous oxide-oxygen, I feel that ethylene possesses distinct advantages over all other anesthetics, especially when combined with local infiltration in pelvic and upper abdominal operations.

One of the many advantages of any gas anesthesia is the early awakening with little or no vomiting and the ability to clear the throat of mucus, and the trachea and bronchi of aspirated stomach contents, pus from lung abscess or material following jaw, mouth and throat operations. Gas is not irritating to lung epithelium and consequently can be given when anesthesia becomes necessary following pneumonia or any acute respiratory infection. At present the two gases, nitrous oxide and ethylene, are available and quite naturally a decision must be arrived at as to their relative safety and efficiency if the advantages of each are to be taken into account. When ether is combined with nitrous oxide-oxygen, the explosive hazard is fully as great as it is with ethylene-oxygen. Further, ethylene has the advantage over nitrous oxide in that it produces greater relaxation, and better oxygenation can be maintained throughout long and difficult operations.

Cyanosis is distressing to both surgeon and anesthetist, especially when they are accustomed to the appearance of normal oxygenated blood.

The immediate safety of a gas anesthesia is due to the percentage of oxygen that can be administered with it. This consideration is an important one, as abundant research has shown. It is now quite generally agreed that blood changes depend on the amount of oxygen in the circulating blood, and as cyanosis does not develop in a properly administered ethylene anesthesia, it is quite clear that blood changes are practically absent. The results of the early studies of Luckhardt and his co-workers, relative to blood changes under ethylene anesthesia, have been repeatedly confirmed by other investigators. Brumbaugh² found "no changes in hemoglobin, no appreciable change in the icterus index, blood sugar is increased but quickly returns to the pre-anesthetic level. There was no increase in blood urea

Read before the Section on Miscellaneous Topics, Sessions on Anesthesia at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Herb, Ethylene. Notes Taken from the Clinical Records, Anesthesia and Analgesia, December 1923.

² Brumbaugh, J. D. Effects of Ethylene-Oxygen Anesthesia on the Normal Human Being. J. A. M. A. 91: 462 (Aug. 18) 1928.

immediately following ethylene anesthesia and but a slight increase in twenty-four hours. A moderate temporary decrease of the carbon dioxide combining power of the blood. No change in coagulation time. No change in the character of the clot." Trout,³ from his researches, concluded that "ethylene-oxygen produces less alteration of the percentages of blood sugar, the coagulation time or the bleeding time than any other of the commonly employed anesthetics."

Ether is the only general anesthetic agent known at the present time that will produce complete relaxation in all types of surgical conditions. However, its use has been greatly reduced since the advent of ethylene. In abdominal operations, in which complete relaxation is required, a combination of ethylene and ether may be given which usually produces the desired relaxation. This failing all ether may be resorted to and continued till the peritoneum has been sutured, when a return to ethylene for the remainder of the closure may be practiced, thus considerably shortening the ether anesthesia.

Active intestinal peristalsis may occasionally interfere with the operative technic and the administration of ether becomes desirable, as ethylene does not stop peristalsis.

Operations requiring vapor anesthesia, and abdominal operations, are practically the only ones in which straight ether is administered in the Presbyterian Hospital. The number of abdominal operations in which straight ether has been given has been greatly reduced since the introduction of local anesthesia in combination with ethylene-oxygen. The best results with local anesthesia have been obtained by nerve blocking. The entire abdominal wall and peritoneum may be rendered anesthetic by a simplified bilateral blocking of the intercostal and lumbar nerves. When the nerve blocking has not been complete, peritoneal infiltration after the abdomen is opened will greatly aid the anesthesia.

When a deeper anesthesia is required than can be safely obtained by local anesthesia and ethylene, ether may be combined with the ethylene for short periods of time, either during the early stages of the operation or sometime during the anesthesia. This small amount of ether, apparently, does not affect the awakening period and has no ether after-effect.

The most common reason given in answers to the questionnaire for not using ethylene was the fear of explosion. This fear was held by the surgeon, the anesthetist or the hospital superintendent. Doubtless, the wide publicity given the early mishaps is responsible for this widespread fear. In some instances, particularly in the Far West, fire insurance rates were so increased that the use of ethylene had to be abandoned.

The most enthusiastic users of ethylene were those who reported many thousand anesthetics, conversely, those who were most positive that it had no advantage over nitrous oxide had had little or no experience with its use. There is almost a unanimous feeling among dentists that nitrous oxide is preferable to ethylene in their office work, because of the fear of explosions, because nitrous oxide oxygen is pleasant to inhale, because relaxation is not necessary and because the anesthetics are of short duration. Oral surgeons who use ethylene praised it especially for jaw operations and impacted teeth.

Two of the reasons given by several correspondents were the Cleveland disaster⁴ and "the Evansville explosion." As a matter of fact neither of these most

unfortunate happenings was due to ethylene. The Cleveland explosion was due to fire in the storage plant of X-ray films in a building apart from the operating department. The Evansville explosion occurred during the repair or manipulation of a tank of nitrous oxide, which it was thought might possibly have contained some ethylene from a backflow during an operation. The latter is a supposition without any proof and shows the prejudice toward ethylene or a general lack of knowledge that nitrous oxide-oxygen-ether is explosive. The greater number of explosions with nitrous oxide-oxygen-ether during or after anesthesia when the machine was idle, as recorded in answers to the questionnaire, shows definitely the explosiveness of this mixture. After a careful study made in the Evansville case, I have concluded that static electricity played a very important part in this sad fatal explosion.

The undue publicity given the explosive hazard of ethylene was unfortunate, because it has deprived patients, surgeons and anesthetists of a most valuable anesthetic agent. The answers to my questionnaire regarding nitrous oxide-oxygen-ether explosions were quite unexpected, because of the much greater number than had occurred with ethylene over the same period of time. It is regrettable that I did not include the number of nitrous oxide-oxygen-ether anesthetics in the questionnaire, because that would have given an opportunity for comparison.

The number of ethylene and nitrous oxide-oxygen-ether fatalities has not been large, considering the hundreds of thousands of anesthetics. However, a great deal may be done to diminish the hazard further. Many who are using ethylene and nitrous oxide-oxygen-ether are living in a sense of false security because of the inefficiency of their methods for static control or the lack of knowledge of the explosive nature of nitrous oxide-oxygen-ether.

An exhaustive study was made by Cheney and Folkman⁴ to determine the concentration of ethylene in the air of the operating room. Their observations are instructive and of practical value. Using a device developed by the Union Carbide Company for the detection of methane and other inflammable gases in coal mines, they were able to determine the actual percentages of ethylene in the air at any particular point desired during the course of the anesthesia. The instrument determines percentages of a combustible gas, up to and including the lower limit of inflammability. In the case of ethylene, the lower limit of inflammability is 3.02 per cent, that of ether is 1.71 per cent with air. At a distance of 10 feet or more from the patient's head, the concentration of ethylene was so small as to be indeterminable and after numerous tests in the area 6 feet or more from the head of the table the readings were confined to the territory within that radius.

GENERAL SUMMARY

1 No evidence of accumulation of building up of ethylene percentages in any portion of the operating rooms was shown after the longest period of anesthesia.

2 Electric switches (or similar apparatus) on the walls of the operating rooms were shown to be entirely harmless, as the maximum ethylene concentration at these points showed less than 0.1 per cent. It should be kept in mind that the minimum percentage of ethylene in air that is flammable is 3.02 per cent.

³ Trout, H. H. Blood Changes Under Ethylene Anesth. & Analg. 9 (Sept-Oct) 1929.

⁴ Cheney, M. B. and Folkman, M. L. Anesth. & Analg. 9: 11 (Jan-Feb) 1930.

3 The tests demonstrate the very rapid "rate of diffusion" of ethylene in air, which, obviously, is the basic reason for the low concentration found

4 The tests showed that the only points when explosive mixtures of ethylene and air occurred were in the immediate vicinity of the face mask. The "dangerous area" may be described as one foot above the mask and two feet to the side of the exhalation valve. All the tests were made in hospitals of modern construction with no unusual ventilating systems

CONCLUSIONS

The danger zone so far as flammable mixtures of ethylene and air are concerned is confined to an area within a few feet of the exhaling valve of the face mask. Furthermore, the direction in which the exhalation of the patient is pointed, in case the face mask is equipped with an adjustable vent, is an important factor

INFLAMMATION OF ETHYLENE-OXYGEN

Tests were made by the Bureau of Mines to determine the limits of inflammability of ethylene-oxygen mixture. It was found that the ethylene content must be 80 per cent or higher, or, in turn, the oxygen content must be higher than 20 per cent. Nine volumes or more of carbon dioxide per volume of ethylene was found necessary to render ethylene noninflammable, and in a similar way it required 13.3 volumes or more of nitrogen per volume of ethylene. In view of the large amount of either of these gases required it is not feasible to use this method in practice as has been suggested, because the oxygen content would be so reduced that the patient's life would be in jeopardy

METHODS OF INSURING SAFETY

Safety in the use of ethylene-oxygen and nitrous oxide-oxygen-ether mixtures must be accomplished by removing sources of ignition such as open flames, gas burners, stove fires, alcohol lamps, lighted candles, the striking of matches, cauteries near the point of administration, smoking near the gas machine, fulgurating machines with an open spark gap, and x-ray rooms

That there is any advantage in passing ethylene over or through water to prevent explosions is open to question. In order to prevent freezing of the valves, the compressed gas is made very dry and will not be saturated by passing through water unless the water is kept warm or the gas is broken into very small bubbles

From my own experience and the experience of other anesthetists, the conclusion has been reached that it is the static from without and not from within the machine that is to be feared. Several of the reported explosions occurred sometime after the close of the operation, when the machine had been "idle" for from a few minutes to two or more hours. The explanation of such accidents is simple. The machine had accumulated static on its external surface in sufficient amount to cause a spark when contact was made. If the charge on the machine is discharged through grounding, such accidents will not occur. During cold dry weather the air is full of static electricity and any moving body accumulates a sufficient amount to produce a spark, as is evidenced by a shock when one touches an electric light button or lights a gas jet after scuffing along on a rug. It is a mistake to believe that the flow of gas creates static, although the explosion may occur at the point of exit of the gas because of a spark at that point. Two of the explosions (one ethylene and one nitrous oxide-oxygen-ether) in our hospital were caused by

friction, one on the outside of the breathing tube and the other on the outside of the bag some distance from where the gas was being delivered to the patient

A relative humidity of 60 per cent will render surfaces conductive and prevent an accumulation of static. Doubtless, certain climates are so humid that static electricity is discharged and there is little or no danger of an explosion from this source, consequently, no precautions need be taken. If the humidity could be kept high enough in the operating rooms, it might be difficult to develop electrostatic charges, and any charge brought in from the outside would leak off. The drawbacks to a high humidity plan are, first, that the humidifying system would need constant watching and a drop in humidity might pass unnoticed and prove disastrous, second, that a high humidity, at the temperature maintained in the operating room, would render working conditions very uncomfortable. In considering the prevention of explosions, it was felt that a system was desirable which would not require constant supervision, and which, at the same time, would cause no discomfort to those concerned

Our plan of preventing electrostatic explosions was that of having all objects on which a charge might exist connected together by a metallic connection and held at a standard potential, such as ground

Because of the fact that charges might be brought in from outside, as well as developed by walking across the floor of the operating room, the conclusion was reached that a positive grounding system was needed, a system that would always give a dependable ground, that would ground any person or apparatus brought up to the operating table or gas machine, and that would not require constant watchful supervision

It was decided that the best plan at the time would be the installation of a sheet of steel on the floor, large enough to accommodate surgeons, anesthetists, nurses, the operating table and the gas machine. The sheet was installed and is of such a size that any person approaching the gas machine or operating table will first be grounded by stepping on the outer margin of the metal plate. Later, the following floor plan was devised and was installed. The floors and base are what is commonly known as cloisonne terrazzo, similar to the kind of floors used in some of the large rooms in modern hotels. Briefly, it consists of small squares of terrazzo, separated by narrow brass strips. For our purposes these strips are placed 5 inches on centers each way and are slotted together at the intersections. After the terrazzo material hardened, the entire surface was ground down to a smooth finish, which brings the edges of the strips flush with the floor. The general appearance is that of a tile floor, except that the joints are brass instead of cement. This grille of brass strips is electrically connected together and then grounded to the water pipes. Each piece of movable equipment, such as tables, stands and anesthetizing machines, is equipped on the under side with several small link brass chains, which are long enough to drag on the floor for several inches

Regardless of the position of the equipment on the floor, at least one of these chains is in contact with a brass strip, thus all are grounded and a difference in potential is impossible. The smallness of the squares of terrazzo also grounds the operators and assistants, as they move about in their regular routine of work, which eliminates the possibility of an assistant going to another room or ungrounded equipment and bringing back a charge of differential potential

The points of the system that was devised to prevent static may be thus summarized

1 The terrazzo-brass floor that has been described or a grounded metal plate of nonrusting furniture steel, large enough to accommodate the operating table, the staff and the gas machine, with an unused margin on all sides, has been installed in the operating rooms

2 The netting covering the breathing tube and bags is made of tinsel cord, which is connected to the metal frame of the machine

3 Pendent brass chains, two or more in each case, are fastened to the axles of the operating table and the gas machine to ground them to the metal floor or the terrazzo floor

4 A chain is used with a small metal plate on one end, which is placed under the patient to ground him to the table. The other end is thrown over the shield at the patient's head and down to the grounded table

Experiments, and the administration of more than 20,000 anesthetics (since its installation) without the slightest indication of an explosion, confirm the belief that this system of grounding and of electrical interconnection will prevent electrostatic sparks

While it may seem that the matter of connections has been entered into with considerable detail and that fine points have been followed to the extreme, it was felt that, to be on the side of absolute prevention and protection, a conclusion should be reached on every point that could possibly be foreseen

Electric fans of the alternating current type have no brushes, consequently there is no sparking unless the fan is out of order. Such fans may be used in the operating rooms with safety. If operating rooms are small and the point of administration is within a few feet of the electric light switch, it is good protection to have mercury switches, which do not produce a spark when turned on and off, or have the switches outside the operating room

In passing, I may state that those who have questioned our method for the control of static electricity are not familiar with its completeness, its simplicity, and the small expense connected with its installation. That it is efficient there can be no doubt, when one considers the many thousand anesthetics that we have given since the grounding was put in, without the slightest indication of an explosion, although the administrations were under exactly the same conditions that obtained during the first few hundred anesthetics (administered before grounding), when several explosions occurred with both ethylene and nitrous oxide-ether

The question as to the cost of ethylene must be a relative one, because the administrator, character of the operation, the amount of rebreathing practiced, and the type of gas machine all play their part in the amount used. All things being about equal and taking the record of four anesthetists in a like number of different hospitals, and averaging them, we found the cost to be about \$1.60 an hour. The original cost of ethylene quite naturally must vary. Hospitals using a large amount would be able to purchase it more cheaply than those using a small amount

It has been said that ether explosions and fires would number at least a hundred a year. Is it because they are so common that little publicity is given them?

The deaths from explosions during oxygen-ether anesthesia lead to the belief that the mixture of pure oxygen and ether form a more highly combustible

agent than does ether and atmospheric air. It is not generally known that a gallon of ether, under proper air conditions, has the explosive power of 75 pounds of dynamite. While the questionnaire did not include ether accidents, many volunteered such information

Because of the general knowledge of the fire hazard of ether, certain precautions are generally observed. When an accident occurs, it is due to carelessness or caused by a badly constructed vaporizing machine. No one would think of discarding ether because of the possible accidents it might be responsible for. Then why abandon such a valuable agent as ethylene when its hazards can as surely be controlled?

Summing up the reported explosions, injuries and deaths, I find the following

Ethylene, twenty explosions, with one injury and five deaths

Mixture of nitrous oxide-oxygen and ethylene, two deaths

Nitrous oxide-oxygen-ether, thirty-nine explosions with seven injuries and five deaths

Nine explosions occurred when the machines had been idle from a few minutes to two or more hours. The machines had been used for ethylene administration in two instances and for nitrous oxide-oxygen-ether in seven of these explosions

From the foregoing it is evident that nitrous oxide-oxygen-ether forms as highly an explosive mixture as does ethylene, and precautions against this danger are fully as urgent as is required with ethylene-oxygen

Some of the injuries that occurred both with ethylene and with nitrous oxide-oxygen-ether were due to the ignition of the ether in the glass ether chamber of the gas apparatus. The breaking of this chamber scattered the glass and ether about the room, causing fires and burns

Two deaths were recorded due to impure ethylene (carbon monoxide), two in the hands of "inexperienced administrators," and one due to "vasodilatation"

It appears to me that the last named death should be charged to operative conditions, such as hemorrhage, as ethylene does not produce or contribute to shock. If it destroys life, it does so through insufficient administration of oxygen, which would be asphyxia

ABSTRACT OF DISCUSSION

DR. ARTHUR DEAN BEVAN, Chicago. In the subject of anesthesia, a joint laboratory and clinical research is the most scientific method of study. Ethylene was introduced in the surgical clinic of the Presbyterian Hospital in 1923. We used it about 2,500 times and during that period had a number of explosions. Fortunately, nobody was hurt. The rubber tubing at the mask was blown out, but it so disconcerted us that we gave it up. I ordered ethylene out of the hospital until the whole situation had been carefully analyzed. We found that the explosions were due to the static spark and that to eliminate the static spark it was necessary to ground the entire operating group. That could be done by placing the entire operating team and plant on a steel mat wired to the plumbing. This is described in my article on anesthesia in *THE JOURNAL*, Nov. 21, 1931, page 1530. We began the use of ethylene again and have used it in 27,000 cases without an anesthetic death and without an explosion. Ethylene has a wide place in modern anesthesia. I think Dr. Luckhardt and Dr. Herb have made the greatest contribution to anesthesia that has been made in the last twenty years. From my experience in clinical research on anesthesia, I think a most unfortunate situation has arisen in this country, especially in the hands of men of limited experience and men who lack judicial minds. Too many dangerous agents are being used. Among the most dangerous I would name first spinal anesthesia. There is no doubt that

spinal anesthesia has a higher mortality than chloroform. I think the time has come when either spinal anesthesia should be eliminated or its use should be restricted to a very narrow field. There are several other methods of anesthesia that should be used with the greatest possible caution. I refer to intravenous anesthesia and to intrarectal anesthesia. These methods are beyond one's control, once they are administered. The safest, the simplest and the most easily controlled methods of anesthesia must be selected. Today the entire field of anesthesia can be covered in the safest and most satisfactory way with the use of three agents: local—including blocking—ethylene and ether. If preanesthetic agents are employed, the safest is the combination of morphine and atropine in moderate doses.

FOUR FATAL CASES OF UNSUSPECTED AMEBIASIS

PRELIMINARY REPORT ON ONE ASPECT OF THE
RECENT CHICAGO EPIDEMIC

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Following a meeting of about 125 members of the lumber trade who were drawing up a preliminary draft of a code for their industry, there occurred numerous cases of acute colitis and at least five deaths. The meeting was held in Chicago from June 30 to July 2, 1933. In all cases the symptoms began after the meeting was over and when the men were scattered all over the United States and Canada. We became interested in the situation not because of experience with these or other cases of amebic dysentery but because of close friendship and relationship, respectively, to two of the men who died.

The investigation of this situation is far from complete, owing to difficulties in securing rapidly information from many widely scattered localities. This preliminary report is made, however, because it has been found that these cases are a part of a much larger epidemic and because the diagnosis was not sufficiently suspected when the cases turned up sporadically at widely separated points. This criticism is made in all due humility and applies to the present authors themselves, who have no illusions that they would have handled the cases any better than they were handled. In fact, the senior author was consulted by the physician and family of patient 1, and never once (during the life of the patient), thought seriously of amebiasis as the diagnosis, having been trained to think of amebiasis only as a disease found for the most part in the tropics. In view of the fact that THE JOURNAL has contained several excellent articles on amebiasis by Craig¹ and others in the last two years, this shows how difficult it is to teach subjects that are not commonly seen and appreciated.

The epidemic (which was mentioned in the newspapers of the country, November 10) has been placed under control by the department of health of Chicago under the leadership of Dr. Herman N. Bundesen. A preliminary report on the epidemiologic aspects of the situation was presented by Tonney, Hoeft and Spector² before the American Public Health Association

at its meeting, October 9. At the time of this report, Tonney and his co-workers were not aware of the cases presented here. The source was a group of carriers working in the kitchen of a Chicago hotel. The five fatalities among members of the lumber trade all occurred in guests at this hotel.

REPORT OF CASES

CASE 1—History—W. B., a man, aged 43, president of a Boston lumber company, had always been well save for occasional attacks of abdominal pain, attributed by him to mild appendicitis. He had been on a Mediterranean cruise in February, 1933. July 12, the patient suffered an acute attack of epigastric pain with immediate nausea followed by vomiting twelve hours later. He was then admitted to a hospital in New York. There was suprapubic tenderness, and pain on the right side by rectum, but no spasm or tenderness by direct palpation over McBurney's point, there was absence of diarrhea or bloody stools. The white blood count was 18,000 with 90 per cent polymorphonuclears. The temperature was 99.6 F. The urine was normal.

July 13, laparotomy was performed with a preoperative diagnosis of appendicitis. A slightly inflamed appendix and ulcer of the cecum were found, the appendix and cecal ulcer were removed and the wound was closed without drainage.

The pathologic examination revealed that the appendix measured 6 by 5 cm. The serosa was pink and rather granular, and there was a diffuse vessel injection. The lumen had been opened at the proximal two thirds. Cross-section of the distal third showed the lumen apparently obliterated by fibrous tissue. The mucous membrane of the medial two thirds was rough and covered with bloody fluid. Sections were taken from each area. There was also a circular piece of tissue, 4 cm. in diameter, with a wall 0.7 cm. thick and a concavity of one surface. The outer surface was thick around the periphery but with a center which was gray with some necrotic material. The inner surface was somewhat corrugated and was gray around the periphery and red in the center, but there was friable necrotic tissue in the center.

Microscopic examination disclosed many scattered leukocytes in the wall of the appendix. There was no abscess formation nor necrosis. The wall of the cecum showed a large zone of ulceration with hemorrhage and masses of polymorphonuclears. There was intense engorgement of the vessels, some of which showed fibrin and leukocytes in the lumen. Many phagocytes were seen with red cell inclusions.

The pathologic diagnosis was acute gangrenous ulceration of the cecal wall, acute appendicitis.

The next day the patient began to have for the first time severe diarrhea, which gradually became very much worse. Believing that an abscess had developed, surgeons again explored the right lower quadrant five days later and found an almost gangrenous cecum and inflamed ascending colon. The wound was closed after insertion of a soft rubber wick. Two days later a fecal fistula developed, followed in ten days by generalized peritonitis. The patient died, August 4.

Many examinations of stools were made from July 19 to July 26 for typhoid bacilli and *Endamoeba histolytica*. These were negative. Blood agglutination tests for typhoid and bacillary dysentery were also negative.

Autopsy—The entire large bowel was ulcerated, the cecum and ascending colon were gangrenous and there appeared to be only a small zone near the rectal end which still preserved a little mucosa. The liver showed no lesions and observations otherwise were not remarkable. Microscopic examination of the ulcers of the bowel revealed *Endamoeba histolytica*.

CASE 2—History—A. M., a man, aged 64, president of a Toronto lumber company whose past history was unimportant, had been in Japan in 1929 but had not been ill during or after this trip. About July 28 he began to feel tired and feverish and to have a headache. There were no abdominal symptoms at all. The temperature was 102 and the white count 8,000. This condition continued for two weeks, when he began to have diarrhea of from three to four movements a day. Three days later (August 14) he had a sudden severe pain in the abdomen and right shoulder. On examination he presented the

¹ Craig, C. F. The Amebiasis Problem. J. A. M. A. 98: 1615-1620 (May 7) 1932. The Symptomatology of Infection with *Endamoeba histolytica* in Carriers. *ibid.* 88: 19 (Jan. 1) 1927.

² Tonney, F. O., Hoeft, G. L., and Spector, Bertha Kaplan. The Threat of Amebiasis in the Food Handler. J. A. M. A. 101: 1638 (Nov. 18) 1933.

appearance of shock, with marked spasm of the entire abdomen and tenderness in the right lower quadrant. Two days after this attack he was moved to a Toronto hospital, the tenderness in the right lower quadrant persisting. A barium enema showed moth-eaten irregularities of the cecum and ascending colon. The white count was 25,000. August 19, an abscess in the right lower quadrant was drained. August 24 a right subphrenic abscess was drained. The patient died, August 26.

Autopsy—The abdomen showed much necrotic intestine and advanced generalized peritonitis. The large intestine was too gangrenous from the cecum to the transverse colon to show definite mucosal lesions, distal to the hepatic flexure the bowel showed multiple acute ulcers, with "slightly raised margins formed of swollen mucosa" and dark brown, "shreddy" necrotic centers. The appendix was distended at its distal portion. The small intestine had several areas of superficial ulceration, apparently related to a preceding adjacent and severe peritonitis. The liver weighed 2,150 Gm and showed in the right lobe a large abscess, honeycombed and ragged in appearance. Microscopic examination of rectal ulcers and the appendix showed invasion by *Endamoeba histolytica*, with accompanying cellular infiltration. The liver sections merely showed chronic suppurative inflammation without specific characteristics.

CASE 3—History—M. E. R., a man, aged 67, president of a Seattle lumber company, gave a vague history of occasional attacks of diarrhea for the past three years. Acute diarrhea began, July 15. Three days later proctoscopy showed ulcers of the upper part of the rectum. He went against advice from Seattle to Washington, D. C., and on his return, August 1, the diarrhea was worse. Proctoscopy was again performed and he was sent to a hospital in Seattle. At first, physical examination was essentially negative, except for the obvious appearance of exhaustion. The temperature was 102. Repeated stool examinations showed no amebas. A barium sulphate enema, August 2, showed that the colon filled rapidly and apparently normally with the exception of a contracted rectal pouch. The white blood count was then 14,000. During the first three weeks the patient had chills and fever, continued diarrhea, and increasing prostration. Instillation of 1,500 silver nitrate by rectum was given without improvement. Repeated search for amebas in the stools failed to reveal them. August 21, pain and localized tenderness developed in the right lower quadrant of the abdomen. August 28 exploratory laparotomy and appendectomy were performed. Free fluid was found in the abdomen, a smooth mass was found in the rectosigmoid colon, and the cecum was large and edematous. The appendix was inflamed. "This seemed to be more of a continuation of the same process that was in the cecum." The patient stood the operation well at first but then gradually failed and died, September 5.

Autopsy—The abdomen showed a recent unhealed right rectus incision with considerable necrosis and sloughing of muscle and fascia. The large intestine was enormously distended with masses at the cecum, transverse colon and rectum. These were the sites of large ulcerations covered with thick gray, necrotic membranes and surrounded by edematous fibrous and fatty tissues. The small intestine showed no evidence of ulceration. The liver contained in the right lobe an "encapsulated cavity filled with thick, dirty grayish material." Microscopic examination showed ulcerated areas containing many amebas and cysts containing four nuclei. Purulent material from the hepatic cyst showed nonmotile *Endamoeba histolytica*.

CASE 4—History—A. C. L., Jr., sales manager of a lumber company in Louisiana whose past history was unknown, had an attack of "indigestion" July 14 but went to Washington, D. C., from Louisiana the next day. The day after his arrival (July 18) he began to have diarrhea and indigestion but attended to business. July 20 he started home suffering from intense diarrhea all the way and arriving July 22, very much dehydrated. He was taken at once to a hospital. The stools were examined for amebas but were negative. He showed a positive Flexner agglutination and was given large doses of dysentery serum. He continued to grow worse and showed signs of peritonitis about July 28. Two days later, amebas were found in material from the ulcers removed by proctoscopy. The patient died, August 2 of peritonitis in spite of active treatment started the day before.

Autopsy—We have only fragmentary data and do not know whether autopsy was performed.

CASE 5—R. L. K., executive of a lumber company in Louisiana, died from acute colitis, according to a letter from his brother, three weeks after the Chicago meeting. His physician has not sent any report as yet, and therefore it is not certain that he had amebic dysentery.

DIAGNOSIS

In the northern part of the United States, acute ulcerative colitis is probably more commonly due to a streptococcus or other similar organism than to amebas. Cases 1, 2 and 3 were all considered to be instances of such nonspecific colitis. There is apparently no way in which the two types of colitis can be told apart on clinical grounds alone.

Partial reference to recent literature shows that the symptoms and early course of amebic infections may be very variable. That is certainly true of the five cases reported here. Any abdominal condition may be simulated, and diarrhea sometimes never occurs in the whole course of the disease.³ Surgeons who work in tropical countries have found that they must be constantly on their guard to avoid operation in cases of amebiasis under the diagnosis of acute appendicitis.⁴ This is also seen well in an article on the occurrence of amebiasis in Spain.⁵

However, the one important fact shown by the cases in the present series is not that the symptoms are variable but that repeated negative examinations of the stools or of material from the ulcers removed by proctoscopy cannot be trusted to rule out amebiasis.

TREATMENT

Although each of these patients was of such standing in his community that he secured the services of some of the leaders in the profession, not one received treatment that can be considered adequate. There is no question that emetine is practically a specific for the acute attack when given before intestinal perforation has occurred, but none of these men were given it at all, except patient 4, who received it too late. After the diagnosis is suspected, not more than a few hours should be spent in laboratory or other investigations before specific treatment is started. Treatment must be given even if the tests are negative. The dose of emetine is 0.065 Gm once a day, intramuscularly. Chiofon or similar products are also useful and should be given at the same time as the emetine. The dose of chiofon is 0.5 Gm by mouth or 3 Gm in 200 cc of water to be retained by rectum. A good method is to give it by mouth and by enema on alternate days. A full discussion of the treatment of amebiasis may be found in an article by Willner.⁶ The treatment of amebiasis to the extent of completely sterilizing all lesions is often difficult and will not be considered here. Emetine must not be given for more than six to ten days, as it is toxic and may lead to myocardial failure. However, if the patient has amebiasis, he will be greatly improved and the danger of acute perforation will be averted in less than ten days. The chiofon also should be stopped for a while after ten days, although it is not as toxic as emetine.

³ Craig¹ Musgrave W. E. Amebiasis. *Am J Trop Med* 11: 469-503 (Nov.) 1931.

⁴ Reid M. E. Per oral communication to the authors. Connor F. P. *Surgery in the Tropics*. Philadelphia: P. Blakiston's Son & Co. 1929.

⁵ MacDonald Jan. Amebiasis in the Temperate Zone. *Lancet* 2: 1404-1406 (Dec. 26) 1931.

⁶ Willner Otto. Remedies Recently Introduced in the Therapy of Amebiasis. *Medicine* 6: 341-374 (Sept.) 1927.

FREQUENCY OF AMEBIASIS

Amebiasis is considered to be a rare disease in the northern part of the United States and in Canada. It is probably not nearly so rare as it is supposed to be.⁷ In 1932, only four cases and two deaths were reported in the whole of Massachusetts. Dr. Anderson feels that many diagnoses are made that are not reported and in addition that many more cases occur that do not have the correct diagnosis made. In view of the outbreak reported here, it is obvious that even if it has been a rare disease in the past it is a disease that must be given much more consideration in the future.

SUMMARY AND CONCLUSIONS

- 1 Four deaths occurred from amebic infection.
- 2 The infection was probably received from carriers, who were found to be working in the kitchens of a Chicago hotel.
- 3 Cases of suspected amebiasis must be given treatment by emetine or emetine together with chiniofon, irrespective of whether or not the diagnosis is confirmed by laboratory investigations.⁸

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THE EXTENT OF THE RETENTION OF INGESTED ALUMINUM

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This paper is one of a series¹ on the hygienic aspects of aluminum cooking utensils. It deals with the extent to which aluminum is stored in the tissues

under conditions of a varied alimentary supply of soluble aluminum salts.

The study of the elimination and the retention of aluminum is of importance, first, because aluminum is almost universally present in foodstuffs, secondly, because the metal is used extensively for the manufacture of cooking utensils and food containers, and, thirdly, because the data on the distribution of aluminum after feeding aluminum salts are of value in the elucidation of the absorption, retention and elimination of other metals.

In addition to its natural occurrence, aluminum may enter foodstuffs by contact with the metal or by the addition of salts of aluminum. The extent to which aluminum enters foods cooked in aluminum utensils has been shown elsewhere² to be extremely small, being near the limits of detection. As was to be expected, acid foods and foods to which sodium bicarbonate had been added acquired more aluminum than did others. It was found also that more aluminum enters food from stained than from bright utensils, and that sugar retards this action.

The chemical properties of aluminum form a clear background for the study of its pharmacologic action. Aluminum hydroxide is amphoteric with an iso-electric point at about p_H 5.5. In the presence of the phosphate ion, an aluminum phosphate is formed, insoluble at about p_H 2.8 and lower acidities. The pure tertiary phosphate, $AlPO_4$, probably does not exist. Under the influence of water, various degrees of hydrolysis occur to give basic phosphates. Organic hydroxy acids tend to prevent the precipitation of aluminum as a phosphate. The formation and precipitation of aluminum phosphates in the alimentary tract are undoubtedly also influenced by foods and their digestion products.

The older literature on the fate of orally administered aluminum is confusing because of the employment of inadequate methods for determining aluminum in tissues. The newer published evidence, based on the application of more refined methods of analysis,³ is "that the concentrations of aluminum in biological matter must invariably be very low."^{2c}

EXPERIMENTAL

Selection of Animals—Guinea-pigs were chosen in these experiments because they present another and a markedly susceptible species in their response to alimentary aluminum. Guinea-pigs readily consume a porridge type of diet in which soluble aluminum salts most suitable for absorption may be incorporated. The dietary habit of these animals is most favorable to maximum absorption of aluminum, for when food is constantly available for consumption their stomach and intestines contain food continuously.

2 These papers are as follows:

- (a) McCollum E. V., Rask, O. S. and Becker, J. E. A Study of the Possible Role of Aluminum Compounds in Animal and Plant Physiology. *J. Biol. Chem.* **77**: 753-768 (May) 1928.
 - (b) Myers, V. C., Mull, J. W. and Morrison D. B. The Estimation of Aluminum in Animal Tissues. *J. Biol. Chem.* **78**: 595-604 (Aug) 1928.
 - (c) Underhill F. P. and Peterman F. I. Studies in the Metabolism of Aluminum. I. Method for Determination of Small Amounts of Aluminum in Biological Material. *Am. J. Physiol.* **90**: 114 (Sept) 1929.
 - (d) Winter O. B. and Bird O. D. The Determination of Aluminum in Plants. II. Aluminum in Plant Materials. *J. Am. Chem. Soc.* **51**: 2964-2968 (Oct) 1929.
 - (e) Tourtellotte D. and Rask O. S. Spectrographic Determination of Aluminum in Biological Ashes. *Indust. & Engin. Chem. Anal. Ed.* **3**: 97-102 (Jan) 1931.
 - (f) Lewis S. J. The Assimilation of Aluminum by the Human System. *Biochem. J.* **25**: 2162-2167 (Dec) 1931.
- 1 The following papers have already appeared:
 - (a) Schwartze E. W. and Hann, R. M. A Preliminary Report upon the Utilization of the Spectrophotometer in the Determination of Minute Amounts of Aluminum. *Science* **60**: 167-170 (Feb. 8) 1929.
 - (b) Schwartze E. W., Murphy, F. J. and Hann R. M. Rolled Oats and Bran in a Scurvy Producing Diet and the Negative Control Test. *J. Nutrition* **2**: 171-181 (Nov.) 1929.
 - (c) Schwartze E. W., Murphy, F. J., and Hann, R. M. Studies of the Destruction of Vitamin C in the Boiling of Milk. *J. Nutrition* **2**: 325-352 (March) 1930.
 - (d) Schwartze E. W., Murphy F. J. and Cox G. J. The Effect of Pasteurization upon the Vitamin C Content of Milk in the Presence of Certain Metals. *J. Nutrition* **4**: 211-225 (July) 1931.
 - (e) Cox G. J., Dodds, M. L., Wigman H. B. and Murphy F. J. The Effects of High Doses of Aluminum and Iron on Phosphorus Metabolism. *J. Biol. Chem.* **92**: 24 (June) 1931.
 - (f) Cox G. J., Schwartze E. W., Hann, R. M., Unangst R. B., and Neal J. L. Occurrence and Determination of Aluminum in Foods. I. Determination of Aluminum in Organic Materials. *Indust. & Engin. Chem.* **24**: 403-405 (April) 1932.
 - (g) Beal G. D., Unangst R. B., Wigman H. B. and Cox G. J. Occurrence and Determination of Aluminum in Foods. II. Aluminum Content of Foodstuffs Cooked in Glass and in Aluminum. *Indust. & Engin. Chem.* **24**: 405-407 (April) 1932.
 - (h) A Select, Annotated Bibliography on the Hygienic Aspects of Aluminum and Aluminum Utensils with a preface by Edward R. Weidlein and an introduction by George D. Beal. Published by Mellon Institute of Industrial Research, Pittsburgh, Pa. Distributed free on request.

Constitution of the Experimental Diet—The diet chosen had the composition shown in table 1. Its average nitrogen content was found to be 0.49 per cent, phosphorus, 0.154 per cent, calcium, 0.116 per cent. Of the various ingredients, pumpkin was used especially for its flavor, milk powder for caloric value and vitamins, starch for facilitating the reconstitution of the dried pumpkin colloids that resist imbibition of water, and bran for roughage. The food was cooked in a pyrex flask arranged as a double boiler. The lost water was replaced and the desired aluminum solution containing aluminum in the form of lactate³ or of chloride, or a mixture of chemically equivalent proportions of these two salts was added to each respective batch type of food as required. Glass mixing and

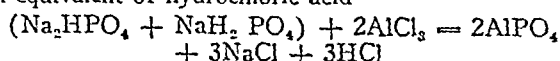
TABLE 1—Composition of Ration

Foodstuff	Percentage
Dehydrated pumpkin powder	60
Whole milk powder	70
Wheat bran	60
Corn starch	20
Water	690
Water or aluminum salt solution	100

feeding dishes were used and silver-plated spoons were used for stirring. Ten grams of spinach was fed daily as an antiscorbutic.

Effect of Aluminum Phosphate Formation—When half the phosphoric acid of an aqueous solution is combined with alkali, the solution is approximately neutral (pK secondary phosphoric acid = 7.16). If aluminum phosphate (approximately $AlPO_4$) is precipitated out of such a solution on the addition of aluminum chloride or lactate, the solution becomes more acid, for base is lost and the hydrochloric and lactic acids left in solution are stronger acids than secondary phosphoric acid. It is to be noted that this result is not due to hydrolysis of aluminum salts, which would give rise to an acid reaction, but that the acidification of a practically neutral food containing a phosphate must be explained in some other way. In our instance we have a food without dissolved aluminum, since it is eventually precipitated. Because it was conjectured that aluminum phosphate would be refractory to absorption in the intestine, it was deemed necessary to control the possible systemic effect of the increase of the acid in the diet. This fact accounts for our use of the three types of aluminum salt additions.

The addition of aluminum chloride to a diet that is neutral in reaction amounts to abstraction of an equivalent amount of phosphate, but the addition of only half an equivalent of hydrochloric acid



Aside from a tendency to phosphate starvation, there must be recognized in this instance the possibility for acidosis to occur. We were aware of this circumstance but proceeded nevertheless because we were interested in trying aluminum under any adverse circumstance whatever, especially since this chemical reaction also favors a greater acidity in the intestine than that of a neutral diet.

³ Aluminum lactate was made by dissolving aluminum chloride in water, adding lactic acid, distilling off the hydrochloric acid and water and allowing crystallization to occur. It could not be recrystallized from water, presumably because a basic lactate formed that was less soluble, although the aluminum content was approximately the same. We added a solution of the salts of aluminum to the animal diet to insure that the aluminum was dissolved at least at the start.

If aluminum is added as a mixture of stoichiometric amounts of aluminum lactate and aluminum chloride, the same reaction goes on, but lactic acid is liberated. The latter tends to increase the acidity of the intestine but does not tend to produce any acidotic condition in the system of the animal, as the acid is metabolized.

If aluminum is added as aluminum lactate, sodium lactate and lactic acid are formed. The acidity of the intestine probably remains practically the same as in the previously mentioned instance, but there is a distinct antacidotic effect in the system. The extra lactic acid introduces another factor, namely, that of aluminum phosphate remaining in pseudosolution or in solution, and to this extent it would therefore favor absorption.

The addition of aluminum lactate duplicates as closely as possible the condition occurring when aluminum is added to food by virtue of solution of the metal. Any method of adding salt would be satisfactory, however, if only a small amount of aluminum were added. But for the larger amounts we chose all methods so as to have the factors mentioned under control.

Care and Feeding of Animals—An amount of fresh food based on the average ad libitum consumption was offered daily, seven days a week. Any food unconsumed after twenty-four hours was removed and its weight deducted from the amount supplied. Tap water was given ad libitum by means of inverted bottles with pyrex tips. Bottles and cages were sterilized two or three times weekly. The guinea-pigs were housed separately in cages of knockdown construction, built of tinned iron wire screen and about 10 by 15 inches in area. The animals were elevated about 1 inch above the tray bottom, with a tinned wire screen through which feces could drop. The tin plating was replaced from time to time by redipping. Tin was used, because it had been shown by one of us⁴ that this metal is not absorbed from the intestine and because tin is resistant to corrosion by the alkaline cresol bath used for sterilization.

TABLE 2—Recovery of Aluminum Added to Beef Liver

	Before Ashing Mg	After Ashing Mg
Aluminum added	0.01	0.01
Aluminum present blank	0.125	0.125
Aluminum found	0.1765 0.1725	0.1725 0.1715
Net recovery	0.0535 0.0475	0.0475 0.0465

After a preliminary observation period for excluding diseased animals, the guinea-pigs were divided into groups and each placed on a diet containing added aluminum (calculated as the metal) from zero (controls) to 1.167 parts per million of consumed food. The latter figure represented seven eighths of the stoichiometric equivalent of the total dietary phosphorus and, incidentally, about the maximum aluminum that would be consumed by animals, owing to the taste imparted to the diet.

Four series of experiments were conducted, the first two of long and the last two of short duration. Series 1 and 2 were with animals obtained from the Kansas State Agricultural College, Manhattan, Kan., series 3 and 4, with animals from a local breeder-dealer.

⁴ Schwartz E. W. and Clarke W. F. Some Observations upon the Pharmacology of Tin. *J. Pharmacol. Proc.* 31: 224-225 (Jan.) 1931.

Analysis of Tissues—All animals were killed with ether. They were immediately dissected with steel instruments, and the tissues were washed with distilled water and stored in sealed glass containers in an electric refrigerator. The colorimetric chemical method used for the determination of aluminum is described elsewhere.¹¹ The recovery of aluminum added to samples of 25 Gm of beef liver before and after ashing is shown in table 2.

The data in table 2 indicate that aluminum added to animal tissue can be recovered quantitatively within the experimental error of the method of analysis.

EXPERIMENTAL RESULTS

A summary of the chemical analyses of the aluminum feeding experiments will be found in tables 3 to 6. All analyses were done at random, except that those in tables 5 and 6 followed those in tables 3 and 4. For practical purposes the data may be divided into two groups, series 1 and 2 constituting a long-time feeding of added aluminum and series 3 and 4 a short-time feeding.

The analytic data reveal several outstanding characteristics, as follows:

There is more aluminum found in the case of the brain and spinal cord, the fewer the animals represented in the composite sample (series 1 and 2).

Both the liver and the heart groups of tissue within themselves may show only minor variations in aluminum content. Any difference between the experimental and the control animals as regards the soft tissues is relatively slight.

The highest content of aluminum in any group of tissues is found in the carcasses in series 3 and 4, composed of younger animals.

There is a considerable difference between the aluminum content in the carcasses of the controls of the first two series of experiments and the controls of the last two series.

The high content of aluminum when small samples were taken is probably due to the difficulties of analysis of small quantities of material. It was hoped that the grouping of the brains and spinal cords would provide a large enough sample for the accurate determination of the aluminum content. Experimental animals 17 and 68 provided only 11.2 Gm of tissue, or a total of 0.028 mg of aluminum. The aliquot used for analyses contained apparently only 0.0056 mg of aluminum, approximately the limit of accuracy of our method.

The aluminum present in the soft tissues of those guinea-pigs receiving added aluminum salts indicates that aluminum is absorbed to a slight extent. However, the absorption as indicated by deposition in the tissues is not proportional to the aluminum concentration in the diet, as evidenced by the fact that no differences appear between animals receiving 25 parts per million and 350 parts per million of the metal. At 700 parts per million additional metal may be deposited because of the diminished protective action of the constant phosphorus intake. At some level below 25 parts per million, absorption may become proportional to concentration or complete absorption may occur. Certainly the level for complete absorption must be very low, or a higher aluminum content would be noted in the tissues.

The noticeably higher aluminum content of carcasses is apparently due to a slight deposition of aluminum in the relatively inactive tissue, the bones. The animals of series 1 and 2 were adults at the end of the experi-

ment, those of series 3 and 4 were growing animals. The differences in the aluminum content of these two groups is probably due to the deposition of aluminum with calcium phosphate during growth and, later, its removal as bone development ceases. This difference, due to age, is apparent between both the experimental and the control animals. In fact, the old animals receiving added aluminum in series 1 and 2 had no more aluminum in their carcasses than the young controls of series 3 and 4. The controls of series 1 and 2 (old animals) contained so little aluminum that it could only be estimated as being below the lower limit of the method of analysis.

If cumulative effect is defined as a gradual increase of slowly eliminated material as a result of the absorption of repeated doses over a prolonged period, the result of which is to cause the delayed appearance of certain definite physiologic effects, then we have demonstrated that aluminum is not cumulative in its properties, as in the amounts absorbed there is no evidence whatever of a direct systemic action of aluminum. Its deposition reaches a maximum in soft tissues (less than one part per million in the guinea-pig) and is independent of the duration of feeding or of the concentration fed after the condition for maximum intestinal absorption has been reached. Furthermore, it has been shown that there is no direct relation between added dietary aluminum and the aluminum content of the carcass (bone), at least until such a time as the diet becomes inadequate in phosphate due to the addition of aluminum, and then only when the bone is actively growing.

It appears that the absorption of aluminum (and iron) from the digestive tract is governed by the dietary phosphorus, existing after digestion as phosphates. Aluminum lactate and aluminum chloride were added to the diet in amounts stoichiometrically equivalent (1,400 parts per million) to the total phosphorus. With these large doses, the two salts were of practically equal potency in producing a complete deprivation of blood phosphorus, leading to a fatal outcome in about four weeks. This grossly exaggerated condition of aluminum concentration with reference to phosphorus in the diet can never be encountered with the aluminum naturally present in the diet or derived from aluminum utensils.

The hydrochloric acid, which is liberated as a result of the precipitation of aluminum phosphate by addition of aluminum chloride, apparently did not place any burden on the animal or have any influence on the absorption and deposition of aluminum. So far as could be told, these animals were precisely similar to those receiving all their aluminum as aluminum lactate, in which case there was an equal tendency toward alkalosis.

Our data and conclusions differ in certain respects from those which have been reported recently in the literature, since we have undertaken primarily the study of the pharmacodynamics of aluminum. Our analyses justify the earlier conclusions of McCollum, Rask and Becker^{2a} that aluminum is not present in biologic material, since by our analytic method we can determine less aluminum than their method was capable of revealing. The aluminum concentrations in the

5. The tissues of these animals were analyzed by a method which was later shown to be unreliable and the data therefore are of no value. A preliminary report has been made¹² on the effects of phosphorus starvation produced by the ration containing 1,400 parts per million of aluminum or an equivalent amount of iron. A complete report will be published later.

tissues of guinea-pigs that we have observed are lower than those reported by Myers and Mull⁶ for rats and for man, and, moreover, our individual analyses are subject to less variation for similar tissues analyzed in a uniform way. We differ from Underhill and Peterman⁷ in finding considerably less aluminum in guinea-pigs than they did in dogs. Our data are in very close agreement with those of Tourtelotte and Rask,⁸ who found by spectrographic analysis of various control rat tissues from 0.05 to 1 part per million and from 0.2 to 1 part per million after feeding 600 parts per million of aluminum for three months. They concluded that "aluminum present in the diet is not absorbed and deposited." Lewis^{2f} has ascertained by spectrographic technique that human blood is usually aluminum free but that small amounts, from 0.3 to 1.2 parts per million, may be found in the blood within forty-eight hours of a liberal feeding of aluminum salts. These studies are in general agreement with ours in demonstrating that the problem of aluminum deposition in tissue has now ceased to be one of major pharmacologic importance.

We do not place implicit confidence in variations between individual animals. There are few types of pharmacologic experiments in which one may not find variations with a maximum value of three or possibly even four times the minimum. This observation has made us cautious to accept any save the most apparent conclusions.

Considering the relatively small amount of aluminum that would get into the diet as a result of corrosion of aluminum metal in contact with food^{1g} in comparison with the large daily intake of phosphorus, there appears to be no possibility of causing phosphorus deprivation with a normal dietary. Since there is no evidence in our data that the consumption of a large amount of aluminum can lead to any primarily pharmacologic action in the system, there can therefore be no medical objection to the consumption by human beings of a small amount (relative to the phosphorus content) of added aluminum, as the factor of safety is ample.

SUMMARY AND CONCLUSIONS

1 The aluminum content of fresh tissues of guinea-pigs receiving no added aluminum is about 0.4 part per million or less.

2 The carcasses of growing guinea-pigs on a diet containing no added aluminum have a higher content of aluminum than those of the adult animals.

3 Feeding of large amounts of soluble aluminum salts produces a barely detectable deposition of aluminum in the soft tissues (less than 0.5 part per million) and somewhat larger amounts (from 0.5 to 1 part per million) in carcasses.

4 No systemic pharmacologic effects can be ascribed directly to absorbed aluminum.

5 Aluminum does not appear to be cumulative in the tissues.

6 No harmful effects can be expected from soluble aluminum occurring naturally in foods or introduced by utensils into a diet of normal phosphorus content.

⁶ Myers A. C. and Mull J. W. The Influence of the Administration of Aluminum upon the Aluminum Content of the Tissues and upon the Growth and Reproduction of Rats. *J. Biol. Chem.* 60: 605-613 (Aug.) 1928.

⁷ Underhill F. P. and Peterman F. I. Studies in the Metabolism of Aluminum. II. Absorption and Deposition of Aluminum in the Dog. *Am. J. Physiol.* 90: 15-19 (Sept.) 1929.

⁸ Tourtelotte D. and Rask O. S. The Absorption of Aluminum Compounds. *Am. J. Hyg.* 11: 225-230 (Aug.) 1931.

Clinical Notes, Suggestions and New Instruments

HYPERSENSITIVITY TO EPHEDRINE AND EPHETONINE

MICHAEL ZELLER, M.D., CHICAGO

In 1923, Chen and Schmidt recommended the use of ephedrine in the treatment of hay fever, asthma and hypotension. Since then, considerable has been written regarding the therapeutic efficacy of the drug but very little mention has been made of the unfavorable effects that it may produce.

Scheer,¹ in 1929, was the first to report a case of dermatitis venenata of the nose and upper lip resulting from the local application of ephedrine in oil. Ramirez and Eller² observed four cases of contact dermatitis due to ephedrine. In 1931, Ayres and Anderson³ reported similar cases following nasal and oral administration of ephedrine, but their cases presented, in addition, generalized scarlatiniform eruptions. Bullen, Frances and Parker,⁴ in 1932, reported two cases of dermatitis medicamentosa due to ephedrine.

Following is the report of a case of dermatitis venenata due to nasal application of ephedrine inhalant.

REPORT OF CASE

Mrs. L. O., aged 42, seen in 1930, complained of hay fever, which commenced usually about August 15 and continued until frost. Skin tests revealed definite sensitization to the pollens of ragweed and burweed marsh elder, treatment for which was given. A sister and one son have hay fever. Two sons have asthma.

Ephedrine inhalant was prescribed for local relief of nasal symptoms. Following the third application of several drops in each nostril, itching and redness of the nose appeared. Within twelve hours this became increasingly worse, resulting finally in yellow crust formation about the alae nasi and diffuse redness and swelling of the nose. Accompanying the local lesion was a diffuse scarlatina-like eruption, appearing first on the forearms, hands, legs and feet and later on the chest and abdomen. This appeared and disappeared alternately for thirty-six hours and then cleared up completely until, three weeks later, desquamation appeared on the palms of both hands and between the fingers and toes. Intense itching was present over the area of the eruption.

EXPERIMENT

After the eruption had entirely disappeared, ephedrine hydrochloride in three-eighths grain (0.024 Gm.) doses was administered by mouth. Within three hours after the first dose, itching was noted on the flexor surfaces of the elbows and knees and between the fingers and toes.

After the fourth dose twelve hours later a generalized scarlatiniform eruption appeared, associated with swelling, redness and crusting of the nose as before. These manifestations persisted for several days and gradually cleared up. Desquamation appeared again about three weeks after the initial eruption.

Ephetamine (synthetic ephedrine) administered by mouth produced itching of the hands and flexor surfaces of the elbows and knees within three hours after the administration of one tablet. Owing to the severity of the itching and eruption produced by ephedrine, the patient would not consent to further ingestion of ephetamine. Epinephrine hypodermically and locally in the nose produced no symptoms.

Scratch tests with ephedrine applied to the patient's forearm were distinctly positive in three hours. A similar test performed with ephetamine was positive in six hours. Controls in both instances were negative.

Patch tests on the patient done with ephedrine and ephetamine resulted in itching six hours later and within twenty-

¹ Scheer Max. A Case of Dermatitis Venenata Due to Ephedrine. *Arch. Dermat. & Syph.* 20: 641 (Nov.) 1929.

² Ramirez M. A. and Eller J. J. Intradermal Scratch Indirect and Contact Tests in Dermatology. *J. A. M. A.* 95: 1080 (Oct. 11) 1930.

³ Ayres Samuel Jr. and Anderson N. P. Dermatitis Medicamentosa Due to Ephedrine. *J. A. M. A.* 97: 437 (Aug. 15) 1932.

⁴ Bullen S. S., Francis N. and Parker J. M. Dermatitis Medicamentosa Due to Ephedrine. *J. Allergy* 3: 485 (July) 1932.

four hours a red scarlatina-like eruption appeared over the area of both patches. This skin response to the local application of ephedrine and ephedrine in the form of patch tests appeared identical to that produced by oral administration of ephedrine. Controls on the patient and nonsensitive individuals were negative.

Passive transfer tests were performed by injecting intradermally the serum of the patient into three normal nonsensitive individuals. After twenty-four hours, scratch tests with ragweed at the sensitized site in one of the normal individuals was positive within fifteen minutes. Scratch tests with ephedrine and ephedrine into the sensitized areas were negative. Controls in the same arm of the normal individuals were negative. Two of the normal individuals were given ephedrine hydrochloride by mouth prior to the experiment, thirty-six hours after the passive transfer, ephedrine hydrochloride in three-eighths grain doses was administered by mouth, but no alteration appeared in the sensitized skin areas.

SUMMARY

1 Patch tests and scratch tests were positive in a case of ephedrine and ephedrine hypersensitivity and appear to be of value from a diagnostic standpoint. The mechanism of the scratch response may have been due to simple contact, as in the patch test.

2 Persons not tolerating the use of ephedrine will probably also prove hypersensitive to ephedrine.

3 Passive transfer tests in a person sensitive to ragweed, ephedrine and ephedrine were positive with ragweed but not with ephedrine and ephedrine.

4753 Broadway

CONGENITAL ATRESIA OF THE ESOPHAGUS A NEW DIAGNOSTIC TECHNIC

GABRIEL TUCKER M.D., AND EUGENE P. PENDERGRASS PHILADELPHIA

The mortality rate, so far as I have been able to determine, is 100 per cent in congenital atresia of the esophagus. Death is not due to starvation in most cases, but to pulmonary complications from the aspiration of secretions and from the return of fluids and foods when a gastrostomy has been done through the lower segment of the esophagus.

The usual method of diagnosis is the administration of a bismuth preparation or barium sulphate with roentgen study. This outlines the pouch, and if the upper segment of the esophagus communicates with the trachea, the mixture passes

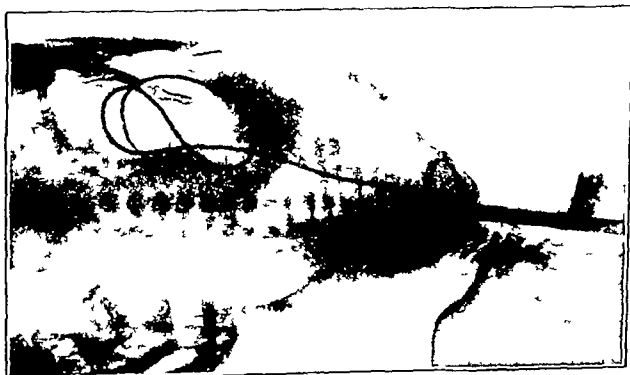


Fig 1—Infant bronchoscope within the trachea. An opaque catheter has been introduced through the bronchoscope through the tracheo-esophageal fistula and lower segment of the esophagus into the stomach.

into the tracheobronchial tree. If there is no communication between the upper segment of the esophagus and the trachea, unless great care is exercised there will be an overflow and secretions will be aspirated into the trachea, in many cases contributing largely to the pulmonary complication.

Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

A female infant 3 days of age was referred to the Bronchoscopic Clinic at the Hospital of the University of Pennsylvania by Dr. Richard Meade of Philadelphia, with a history of inability to swallow and regurgitation of all fluids from birth. The child was apparently well developed and well nourished.



Fig 2—An opaque catheter within the larynx and trachea and lower esophageal segment establishing the diagnosis of congenital atresia of the esophagus, type 3 B.

The following technic was used in examination of the esophagus.

The child was placed on a fluoroscopic table, and all secretions were aspirated from the pharynx and the upper segment

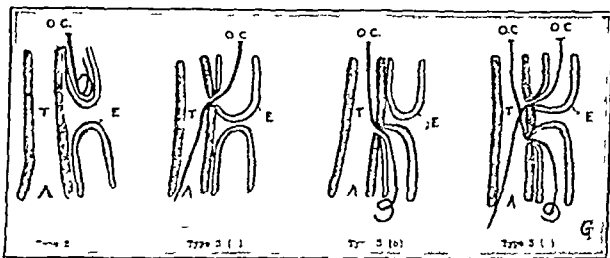


Fig 3—Diagram illustrating the use of the opaque catheter in the differential diagnosis of the types of congenital esophageal atresia. O.C. indicates opaque catheter, T, trachea and E, esophagus. (Adopted from E. P. Vogt.)

of the esophagus. A 35 mm esophagoscope was passed into the upper segment of the esophagus, which was found to terminate in a blind pouch above the level of the suprasternal notch. A small amount of thin bismuth mixture was then given, 1 teaspoonful, and a film was made showing the outline of the upper segment of the esophagus. The bismuth solution was then aspirated from the upper segment of the esophagus. A 35 mm infant bronchoscope was passed, and the lower portion of the trachea was explored. A fistulous tract was found in the posterior tracheal wall, just at the entrance of the left bronchus. A small opaque ureteral catheter was passed through the bronchoscope into the fistulous opening, and under fluoroscopic guidance it was seen to pass into the lower segment of the esophagus and on into the stomach. This established the diagnosis of a communication between the lower end of the trachea and the upper end of the lower segment of the atresic esophagus. Gastrostomy was done by Dr. I. S. Ravdin, and the lower end of the esophagus was tied off. Gastrostomy feeding was carried out, and the child progressed favorably for several days. Pulmonary complications finally developed from aspirated secretions due to overflow and post-mortem examination showed that the closure of the lower end of the esophagus was successful in preventing the passage of fluids from the stomach into the trachea.

CONCLUSION

A case of type 3 A congenital atresia of the esophagus is presented, of the more frequently occurring type A. A method of combined roentgen and esophagoscopy technic is presented for determination of the exact type of atresia and the preven-

tion of aspiration of opaque mixtures into the tracheobronchial tree

It is suggested that, with the establishment of a fistula in the neck from the upper segment of the esophagus, in order to prevent aspiration of secretion, later resection or dilation of the strictured area might be accomplished

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

DIPHTHERIA TOXOID (See New and Nonofficial Remedies, 1933, p 384)

E. R. Squibb & Sons, New York

Diphtheria Toxoid Squibb (See New and Nonofficial Remedies 1933 p 386)—Also marketed in packages of one vial containing 1 cc of diluted diphtheria toxoid for the reaction test.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1933, p 359)

The National Drug Co., Philadelphia.

Gas Gangrene Antitoxin Refined and Concentrated—An antitoxic serum prepared by immunizing horses individually against the toxins of *B. perfringens* (*B. welchii*) and *vibrio septique*. After the desired degree of potency is obtained, the horses are bled the plasma is separated and the serum is prepared in a manner similar to that used for other antitoxic serums. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. The unit values of the constituents are determined according to the method described by the National Institute of Health. Marketed in packages of one syringe containing 10,000 units of *perfringens* antitoxin and 10,000 units of *vibrio septique* antitoxin.

Dosage—The contents of one syringe preferably by intravenous or intramuscular injection repeated in from eight to twenty four hours as required.

Tetanus Perfringens Antitoxin Refined and Concentrated—An antitoxic serum prepared by immunizing horses individually against the toxins of *B. tetani*, *B. perfringens* (*B. welchii*) and *vibrio septique*. After the desired degree of potency is obtained the horses are bled the plasma is separated and the serum is prepared in a manner similar to that used for other antitoxic serums. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. The unit values of the constituents are determined according to the method described by the National Institute of Health. Marketed in packages of one syringe or one ampule vial containing 1,500 units of tetanus antitoxin, 2,000 units of *perfringens* antitoxin and 2,000 units of *vibrio septique* antitoxin.

Dosage—For prophylaxis the contents of one syringe, or ampule vial injected subcutaneously or intramuscularly for treatment the contents of three or four ampule-vials or syringes, injected intravenously.

ERYSIPELAS ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1933, p 370)

The National Drug Co., Philadelphia

Erysipelas Antistreptococcus Serum—The serum is obtained from horses immunized with hemolytic streptococci isolated from patients with erysipelas also with the toxins produced by these organisms. It is concentrated and refined by a method similar to that used for diphtheria antitoxin. Marketed in packages of one syringe containing 10 cc., the average initial therapeutic dose.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1933, p 398)

The National Drug Co., Philadelphia

Schick Test Peptone Diluent—(See New and Nonofficial Remedies 1933 p 400)—For the control test, the product is supplied in single vial packages of 1 cc. and 5 cc. containing respectively sufficient heated diphtheria toxin diluted with peptone solution, for ten and fifty control tests.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1933 p 377)

The National Drug Co., Philadelphia

Tuberculin Old (Human)—(See New and Nonofficial Remedies 1933 p 380)—Also supplied on special order in 10 cc. ampule vials of five equal dilutions 1 to 4 representing in each two minims respectively 0.001 mg. 0.01 mg. 0.1 mg. and 1 mg. of old tuberculin and dilution 5 representing 10 mg. of old tuberculin in each minim.

EPHEDRINE SULPHATE-ABBOTT (See New and Nonofficial Remedies, 1933, p 192)

The following dosage forms have been accepted

Capsules Ephedrine Sulphate Abbott ¼ grain
Capsules Ephedrine Sulphate Abbott ½ grain
Capsules Ephedrine Sulphate Abbott 1 grain
Solution Ephedrine Sulphate Abbott 0.5% It is preserved with chlorbutanol 0.5%

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

COLMAN'S MUSTARD

Distributor—Atlantis Sales Corporation, Rochester, N. Y.

Manufacturer—J. & J. Colman, Limited, London and Norwich

Description—A blend of yellow and black mustard flours

Manufacture—Yellow and black mustard seeds are separately graded and cleaned of foreign materials and seeds by the usual commercial processes for cleaning grain and seeds. The seeds are crushed between rolls, the crushed material is sieved to remove the hulls. The resultant finely ground yellow and black mustard flours are blended in definite proportions to maintain a uniform standard product, which is packed in tins.

Analysis (submitted by manufacturer) —

	per cent
Moisture	4.1
Ash	4.4
Acid insoluble ash	0.2
Fat (ether extract)	35.0
Nitrogen	5.4
Protein (nonallyl isothiocyanate N X 6.25)	32.9
Crude fiber	1.0
Copper reducing substances as dextrose by direct acid hydrolysis method	7.3
Allyl isothiocyanate	0.7

Claims of Manufacturer—Conforms to the United States Department of Agriculture standard and definition.

HAWAIIAN FINEST QUALITY PINEAPPLE

(VACUUM PACKED) (CRUSHED, SLICED AND TIDBITS)

(1) DORIS (2) RIVAL, (3) SNOW BALL, (4) HONEY GROVE, (5) WHITE VILLA BRANDS

Packer—Hawaiian Pineapple Company, Ltd, San Francisco

Distributors—1 and 2, Rival Foods, Inc., Cambridge, Mass. 3 G. E. Howard & Company, Newburg N. Y. 4 and 5, the Cincinnati Wholesale Grocery Company, Cincinnati

Description—Canned pineapple (sliced, crushed and tidbits) packed in concentrated pineapple juice syrup with added sucrose. The same as Doles 1, 2 and 3 Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p 1106, and April 29, 1933, p 1338).

TOWN TALK HIGHEST GRADE FLOUR (BLEACHED)

Manufacturer—Lawrenceburg Roller Mills Company, Lawrenceburg, Ind.

Description—Hard winter wheat short patent flour, bleached

Manufacture—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18 1932 page 2210. Chosen flour streams are blended and bleached with nitrogen oxide.

Claims of Manufacturer—An all purpose flour

TOPMOST TOMATO JUICE

Packer—American Packing Corporation Evansville, Ind.

Distributor—Tibbitts-Hewitt Grocery Company, St. Louis

Description—Pasteurized tomato juice with a small amount of added salt retains in high degree the vitamin content of the raw juice. The same as Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p 2289).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 25, 1933

THE MINERALIZATION AND VITAMINIZATION OF MILK

The urge to devise perfect foods was never more compelling among the producers of nutriment than it is at present. The term foods refers here to individual items of the diet rather than to the general regimen, which may comprise a great variety of individual foods. There is a belated but growing appreciation of the fact that nature has not provided any single article of food that alone is adequate or perfect for all persons. Even milk is currently described as "nature's most nearly perfect food," thereby indicating that it has some limitations. Today the science of nutrition is no longer satisfied to speak in terms of proteins, fats and carbohydrates alone. As Professor Sherman¹ remarked in a recent address before the American Chemical Society at Chicago, if something of the order of thirty-odd chemical entities (elements or compounds, as the individual case may be) must be nutritionally supplied to the body from without, besides all the substances that it makes within itself, application of the algebra of combinations and permutations will soon show that a human lifetime would not be sufficient for the consideration of all possible interrelations. Plainly this promises to be almost too fertile a field, a region in which the investigator must guard against losing himself in a jungle growth of interrelationships.

The newer knowledge has begun to stress the special roles of individual inorganic elements—the so-called mineral nutrients. Some of them loom large in importance despite the fact that quantitatively they may be required or desirable in scarcely more than traces, such as a few milligrams of iron or even less of iodine. Other essentials, like the vitamins, also belong in the category of the "little things in nutrition" that count in a large way. Sherman has emphasized that scientifically the vitamins should not go under a group name, for they are not a sufficiently similar or related group of substances. The more one learns about the vitamins, the less alike do they appear. That they have been so

grouped, he adds, is the accidental result of their existence having been discovered and their nutritional importance established in too rapid a succession for the actual physical isolation and complete chemical identification of the substances to keep pace, even though many able chemists have been working actively on the pure chemistry of these compounds.

The unique significance of milk in the American dietary offers the excuse—or perhaps one should say the reason—for attempting to improve it nutritionally as well as from a sanitary standpoint. Even the question of pasteurization has not passed entirely beyond the stage of debate in some quarters. The "modification" of milk, notably for infant feeding, has long been practiced. Originally this involved abstraction of certain components, such as the cream with its richness in fats, the dilution of milk with water, or the combination of dilution with addition of carbohydrate or energy-yielding products. Recent proposals include what have been called the "mineralization" and the "vitaminization" of milk.² It may properly be asked whether the addition of inorganic compounds and vitamin products to market milk as it is ordinarily produced is justifiable.

In attempting to answer this question, Krauss² of the Ohio Agricultural Experiment Station at Wooster has pointed out that mineralization of milk has confined itself to the three elements iodine, iron and copper. Advocates of iodine and of products containing iodine are urging the use of this element in the feeding of dairy cattle, not only because of any benefits the cow may receive but because of the resulting "iodized milk," which may help to solve the goiter problem. Demonstrations made in many laboratories showing that milk is deficient in iron and copper have led many to believe that these two minerals need to be added to milk. With reference to iodine, Krauss believes that the goiter problem is sufficiently complicated already without introducing into the field another material containing iodine, in which the amount of iodine is difficult to control and more difficult to determine. It would seem to be a function of a group of investigators in dairy problems, he believes, to study the fundamentals of the production of iodized milk and to determine the iodine content of market milk in order to allow the medical profession to be guided in its course of action along therapeutic lines. For the present one may disregard the problem of fortifying milk with iron and copper for the infants that have a considerable storage of iron and copper which serves to tide them over until the time when foods with an adequate content of iron and copper can be added to the diet. From the adult standpoint, Krauss contends, the fortification of milk with iron and copper would seem to be an entirely superfluous procedure, except in the treatment of certain

¹ Sherman H. C. A Century of Progress in the Chemistry of Nutrition. *Scient. Monthly*, November 1933, p. 442.

² Krauss W. E. Should the Mineralization and Vitaminization of Milk Become General? *Bimonthly Bull.* 164 Ohio Agric. Exp. Sta. 18 (126 (Sept-Oct) 1933).

anemias in which it is desired to administer iron and copper through the medium of milk

Recorded assays show that milk may be rated as an excellent source of vitamin A, a fair to good source of vitamin B, a variable source of vitamin C, a poor source of vitamin D and an excellent source of vitamin G, and that it contains vitamin E. The feed of the cow plays an important part in determining the amount of each vitamin, except B and G, in milk. Most authorities will agree with Krauss that the haphazard addition of all sorts of vitamins and mineral elements to milk would jeopardize the unique and excellent position now enjoyed by this product in the eyes of the general public and the medical profession. Krauss's conclusions deserve widespread quotation. In spite of the intriguing mystery and glamor that surround some of the newer discoveries in nutrition, he states, the fact must not be lost sight of that plain, ordinary milk is the best single food available and is thus considered by all. The fact that a sufficient intake of calcium cannot be obtained except by the inclusion in the diet of some form of milk or cheese places these dairy products on a pedestal by themselves. However, the incidence of rickets is still greater than it need be. In the past, dependence has been placed on such antirachitic agents as cod liver oil, viosterol and sunshine, natural and artificial. It is not because of the ineffectiveness of these sources of vitamin D that rickets still exists. Rather, it is because of insufficient or unfaithful use of these materials, for which condition parents are probably chiefly responsible. Whatever the explanation may be, the fact remains that the incidence of rickets is still too great and will continue to be until some cheap, generally available, agreeable source of vitamin D is provided. Vitamin D milk seems to offer promising possibilities of meeting these requirements.

TUBERCULOUS BACILLEMIA

Interest in tuberculous bacillæmia has been renewed because of the clear discrepancies in recent studies of blood cultures. The work of Löwenstein¹ and his associates has been disappointing, since most other investigators using Löwenstein's technic have obtained contradictory results. Löwenstein obtains cultures of tubercle bacilli from the blood by centrifugating from 8 to 10 cc of the citrated blood, destroying the erythrocytes with 3 per cent acetic acid and, after washing in distilled water, inoculating the sediment on tubes of Löwenstein's asparagin egg medium. Löwenstein examined in this manner more than 4,000 cases and reported that tubercle bacilli are present in the blood of patients suffering from progressive forms of tuberculosis (from 39 to 100 per cent), renal tuberculosis (59 per cent), laryngeal tuberculosis (55 per cent),

miliary, meningeal and intestinal tuberculosis (from 80 to 100 per cent), acute and chronic polyarthritis (67 per cent), chorea, multiple sclerosis, schizophrenia, and retrobulbar neuritis (48 per cent). The finding of tubercle bacilli in the blood in chorea, polyarthritis and multiple sclerosis was quite unexpected and required explanation.

Since 1930, many investigators have been unable to confirm Löwenstein's work. Wilson² has subjected the entire question to a critical review and has exposed numerous fallacies in technic, which should be avoided hereafter in all examinations for the tubercle bacillus. Acid-fast bacilli are found in commercial distilled water, in reagents made up with distilled water, in tap water, in metal taps, on leather and rubber washers, and in preparations of pepsin and trypsin. Saprophytic acid-fast bacilli occur in dust, milk, grass, smegma, butter, manure, soil, human feces and blood, and in the intestinal contents of insects. Many types of saprophytic acid-fast bacilli cannot be distinguished morphologically from the tubercle bacillus. Another source of error is the presence of artefacts due to fibrin threads, hemin crystals, ovalate crystals, partly disintegrated leukocytic granules, lipid portions of the erythrocyte envelop, and crystals of lecithin and cholesterol.

Still another source of error may be the technic and interpretation of animal inoculations. Many observers have failed to exclude spontaneous tuberculosis, pseudotuberculosis, Salmonella and Alcaligenes infections, and occasionally pyogenic infections that may cause lesions simulating tuberculosis. In only 32 of 512 cases reported in which examination was made by animal inoculations may the results be regarded as positive. Critical study of the results of animal inoculation indicates that genuine tubercle bacilli have been demonstrated in the blood in about 4.9 per cent of patients with severe pulmonary tuberculosis, 36.4 per cent of patients with miliary or meningeal tuberculosis, and 27 per cent of patients with nonpulmonary tuberculosis. Wilson, commenting on Löwenstein's figures, maintains that his criteria for identification of the tubercle bacillus are inadequate and subject to the technical fallacies just stated. In work subsequent to Löwenstein's, 5,573 blood cultures from tuberculous and nontuberculous patients yielded tubercle bacilli in 72 instances. Although rare in the early stages of pulmonary and nonpulmonary tuberculosis, a bacillæmia may occur in from 5 to 10 per cent of patients with severe advanced pulmonary tuberculosis and in from 30 to 40 per cent of those with miliary and meningeal tuberculosis.

Wilson states that there is no reliable evidence that a tuberculous bacillæmia occurs in articular rheumatism, polyarthritis, chorea, multiple sclerosis, schizophrenia, retrobulbar neuritis or Hodgkin's disease, nor is there any reason for implicating the tubercle bacillus as an

¹ Löwenstein E. Das Vorkommen der Tuberkelbazillämie bei verschiedenen Krankheiten. München med. Wchnschr. 78:261 (Feb. 13) 1931. Vergleich der Leistungsfähigkeit von Tierversuch und Kulturverfahren. Zentralbl. f. Bact. (part 1) 123:510 (Feb. 3) 1932.

² Wilson G. S. Tuberculous Bacillæmia. Special Report Series 182. Medical Research Council London 1933.

etiologic agent in these diseases. However, tuberculous polyarthritides and articular rheumatism have been described by Poncet.³ Recently Cooperman⁴ reported four cases of rheumatoid arthritis, which, after arthrotomy, study of the tissues and animal inoculations, proved to be tuberculous in nature. This aspect of the question has not received the attention it deserves. Nevertheless, bacillema of sufficient severity to be recognized by laboratory methods now in use, except as a transitory occurrence, is but rarely present in tuberculosis until the infection has reached an acute stage, associated with extensive lesions or generalization.

Finally, in any investigation no acid-fast organism should be accepted as the tubercle bacillus until it has been demonstrated conclusively to be such by cultural, morphologic and pathogenic tests, due precaution being taken to avoid all positive external sources of error.

THE CHOICE OF OPERATION FOR DUODENAL ULCERATION

The old controversy as to medical or surgical treatment of peptic ulcer, although not finally settled perhaps, has resulted in a somewhat satisfactory compromise. Many surgeons, among them Horsley,¹ try medical treatment for duodenal ulcer, and if this fails they operate. For gastric ulcer, because of the danger of malignant change, they recommend immediate resort to surgical measures.

The problem remains, however, as to what operation should be performed for duodenal ulcer. A contribution to the solution of this problem is Gaither's² recent survey and report. His conclusions are overwhelmingly in favor of conservative operations such as gastro-enterostomy. Strauss's discussion of Gaither's paper, nevertheless, is good evidence that the adherents of gastric resection in this country will not be downed, and the fairly widespread practice of performing radical resection in the clinics of central Europe is well known. The medical profession in general would welcome more accord among authorities on the question raised. Such accord possibly will be delayed until disputants take into account a factor to which attention has been called but little attention given. This factor is the variability of the pathologic conditions that require treatment.

Sebening³ of Frankfurt-on-Main has shown that the type of gastroduodenal ulceration which prevails in central Europe is not the type which prevails in central North America. It is evident, from his report, that he made his comparison of the two types of lesions while

he was sojourning in this country, thus, he had seen material on both sides of the water. He demonstrated, by means of photographs⁴ taken in Schmieden's clinic, what Konjetzney⁵ had described, that is, the almost constant association, in Germany, of gastritis with duodenal ulcer. The gastric change consists in diffuse inflammation, for the most part ulcerative in nature. This demonstration confirmed an observation made in Germany the year before by Walters and Snell⁶ and tentatively reported by them. It may be that in central Europe economic factors and conditions of medical practice result in patients receiving surgical care later than on this continent. If this is so, duodenal ulcers in central Europe probably are larger and produce more obstruction and consequent gastric trauma. The other factor in the comparison can be more briefly stated. In central North America, involvement of the stomach in association with duodenal ulcer is not a prevaillingly characteristic finding.

It seems apparent, therefore, that gastro-enterostomy and other conservative operations would fail to produce the desired results in a large percentage of cases encountered in central Europe, and that the higher mortality rate that partial gastric resection probably entails must be accepted there. However, in central North America, conservative operations would seem rather generally justifiable, unless it could be shown that recurrent ulcer appears in an undue proportion of cases. Nevertheless, even here a number of surgeons favor radical operation for duodenal ulceration, and surgical thought on the subject is not homogeneous. The United States presents many different environments, and its people belong to different racial groups, which in many regions are somewhat segregated. The patients of one physician may differ greatly from those of another. Unless North American surgeons are thoroughly satisfied that the demonstrated differences between gastroduodenal ulceration as encountered generally in central Europe and generally in central North America cannot be demonstrated when the clientele of one North American surgeon is compared with the clientele of another, further investigation of the possibility might be worth while. The pathologic and biometric study that this would involve might result in accord being reached on the middle ground that no operation is preferable of itself but that choice of operation should be deferred until after exploration and thorough inspection have made known whether or not the stomach is involved. Moreover, it must be recognized that there are variations in the capabilities of surgeons, in operative facilities, and in similar factors. This situation emphasizes again the necessity for individualization by each physician of each patient whom he sees.

3 Poncet A. Rhumatisme articulaire tuberculeux. Bull et mem Soc med d hon de Paris 68 464 1909

4 Cooperman M B. Chronic Tuberculous Polyarthritides. Ann Surg 96 1065 (Dec) 1932

1 Horsley J S. in discussion on Gaither

2 Gaither E H. Eventual Results of Gastric Surgery. J A M A 101 966 (Sept 23) 1933

3 Sebening Walter. Why Partial Gastric Resection Is Preferred for Peptic Ulcer in Germany, Proc Staff Meet Mayo Clin 7 139 (March 9) 1932

4 Walters Waltman and Sebening Walter. A Comparison of Lesions Associated with Duodenal Ulcer in Germany and in the United States. Minnesota Med 15 579 (Sept) 1932

5 Konjetzney G E. cited by Sebening and by Walters and Sebening

6 Walters Waltman and Snell A. M. Peptic Ulcer as Seen in Central Europe. Proc Staff Meet Mayo Clin 6 380 (June 24) 1931

Current Comment

VITAMIN C THERAPY

In the majority of cases, guinea-pigs maintained on a diet deficient in vitamin C will develop ulcerative lesions of the intestine, if fed daily doses of tuberculous sputum. If this deficiency diet is supplemented by an adequate amount of tomato juice (vitamin C), however, the animals almost invariably remain free from intestinal tuberculosis. Since the guinea-pig and man are apparently identical in their vitamin C requirements, McConkey and Smith¹ of the New York State Hospital for Incipient Pulmonary Tuberculosis conclude that tomato juice therapy has a verifiable rationale in certain forms of clinical tuberculosis. This conclusion would seem to be timely because of the popular interest in vitamin A as a so-called anti-infective vitamin. Current vitamin charts² suggest that vitamin A (cod liver oil) is the only known vitamin with anti-infective properties. The New York investigators, however, could not verify this much advertised claim. In their hands, sputum-fed guinea-pigs were not protected from intestinal tuberculosis by cod liver oil. They emphasize, however, that this failure is of questionable clinical significance, since man and the guinea-pig are widely different in their normal requirements of vitamins A and D.

Association News

MEDICAL BROADCAST FOR THE WEEK

Talks over Network of the National Broadcasting Company

The American Medical Association broadcasts each Monday afternoon from 3 to 3:15 Eastern standard time (2 o'clock, central standard time). The subject for Monday, November 27, is "Dodging the Common Cold." The speaker will be Dr. W. W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association. Subjects and speakers for subsequent broadcasts will be announced weekly in THE JOURNAL.

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

November 28 Give Thanks
November 30 Holiday, no broadcast.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

December 2 Straight as a Ramrod

THE CLEVELAND SESSION

Application Blanks for the Scientific Exhibit

Application blanks are now available for space in the Scientific Exhibit at the Cleveland Session of the American Medical Association June 11-15, 1934. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

¹ McConkey, Mack, and Smith. D. T. J. Exper. Med. 58: 203 (Oct.) 1931.
² Weston, W., and Levine, H. Vitamin Chart 1931.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

District Meetings—Speakers before the First District Councilor Medical Society at Paragould, October 18, included Drs. Julius Frischer, Kansas City, Mo., on transurethral electrosurgery of the prostate, John H. McCurry, Cash, tularemia, Conley Sanford, Memphis, diagnosis of pernicious anemia, with special reference to atypical forms, and William C. Chaney, Memphis, calcium metabolism and its practical application in the practice of medicine. At a meeting of the Third Councilor District Medical Society, October 19, the speakers were Drs. Silas C. Fulmer, Little Rock, "Classification of Heart Diseases," James A. Warner, St. Louis, "Successful Treatment of Biological Diseases, or Biological Therapy," Carroll C. Turner, Memphis, Tenn., "Emotions and Their Relationship to the Glands of Internal Secretion," Willis C. Campbell, Memphis, "Practical Application of Orthopedic Principles," and Herman W. Hundling, Little Rock, "Uterine Bleeding." The Second Councilor District Medical Society heard the following physicians at its meeting in Batesville, October 9: Howard A. Dishongh, Little Rock, "Symptoms, Diagnosis and Treatment of Undulant Fever," Darmon A. Rhinehart, Little Rock, "Injuries of the Wrist—Clinical Varieties, Anatomical Considerations, and X-Ray Diagnosis," Lee V. Parmley, Little Rock, "Injuries of the Wrist—Their Treatment," and Royal J. Calcote, "Impaired Vision and Blindness of Children." Dr. Frank A. Gray presented a case of Banti's disease. The Eighth Councilor District Medical Society was addressed in Little Rock, November 1, among others, by Drs. Rutherford B. H. Gradwohl, St. Louis on "History of the Blood," Augustus C. Shipp, Little Rock, "Tuberculosis," and Alexander C. Kirby, Little Rock, "Birth Injuries."

CALIFORNIA

Outbreaks of Food Poisoning—Bacterial poisoning in ice cream served at a church supper in Los Angeles, October 11, was held responsible for the illness of more than 100 persons who attended, newspapers reported. Traces of an arsenic insecticide were found in the broccoli served at a dinner in Los Angeles, October 15, causing the illness of more than twenty persons. As the result of this outbreak, a preventive and educational drive on the use of poisonous insecticides as vegetable sprays was begun among gardeners in the state.

Society News—Speakers before the San Francisco County Medical Society, November 14, included Drs. Ralph A. Reynolds and Hermann Becks on "Recent Developments in Paratuberculosis (Pyorrhea) Research," and Ludwig A. Emge "Experimental Studies in Tumor Growth: The Behavior of a Transplantable Benign Rat Tumor During a Period of Five Years." A joint meeting of the Los Angeles Surgical Association and the Los Angeles County Medical Association was addressed, November 10, by Drs. Josiah Morris Slemons, among others, on "Recognition and Treatment of Ectopic Pregnancy." For the first time in the history of San Francisco, not a single case of smallpox was reported during the past year.

Illegal Practitioner Woelfli Sentenced—Frederick Woelfli was recently sentenced to serve 125 days in the Napa County Jail following his conviction of violating the medical practice act. There is also an abortion charge pending against Woelfli. When he was arrested, photographs of a diploma purporting to show his graduation from Rush Medical College, Chicago, and his licensure in Illinois, were found in his possession. Woelfli claimed that the originals were in the care of "some relative of his." Another photograph was of a diploma headed "Crane Sanitarium, School of Natural Therapeutics," dated Elmhurst, Ill. Sept. 30, 1927, stating that he had completed a course of instruction in "Natural Therapeutics." Of the four persons who signed the Crane diploma, only one, Dr. Milo A. Crane, is a doctor of medicine, according to the records of the American Medical Association. In 1927, Crane was expelled from membership in the Chicago Medical Society for unethical conduct. Neither the sanatorium nor its drugless school is recognized by the Association. That the diploma from Rush Medical College is fraudulent is indicated in infor-

mation from the school pointing out the discrepancies between it and authentic credentials. Investigations are being continued by the California Board of Medical Examiners.

FLORIDA

Examination of School Children—Physical examination of all the school children in Hillsborough County was to have begun early in November, according to newspaper reports. Under arrangements worked out by the county school board, parents will be informed of the physical defects of the children.

State Hospital Overcrowded—A recent executive order forbade the acceptance of any more patients at the state hospital at Chattahoochee until the extreme crowding was relieved, according to newspapers. In an attempt to relieve the congestion, the discharge of about 100 senile patients to their relatives was being considered.

Society News—Dr Leigh F. Robinson, Fort Lauderdale, has been elected president of the Florida East Coast Medical Society, and Dr Spencer A. Folsom, Orlando, secretary. The next annual meeting will be held in Orlando. At a meeting of the Midland Medical Society, October 26, Dr Thomas M. Rivers, Kissimmee, was named president, and Dr James R. Boulware, Jr., Lakeland, secretary.

ILLINOIS

Personal—Dr William E. Buxton, West Salem, observed his seventy-fifth birthday, recently. Dr Buxton has been practicing medicine for fifty years. Dr and Mrs Charles D. Gardiner, Grand Tower, celebrated their golden wedding anniversary, October 11.

Chicago

Dr Hesseltine Awarded Prize—Dr Henry Close Hesseltine, instructor in obstetrics and gynecology, Division of Biological Sciences, University of Chicago, was awarded the annual prize of \$100 by the Central Association of Obstetricians and Gynecologists for the most meritorious work done by one of its members. This is the second time Dr Hesseltine has won the prize, this year for his research on "Trichomonas Vaginalis Vaginitis," and last year for a paper on "Gynecologic Fungi Infections in Diabetic Patients."

Society News—The Society of Medical History of Chicago was addressed, November 23, by Drs James B. Herrick on "Allan Burns, Anatomist, Surgeon, Cardiologist, 1781-1813," and by Hugh T. Patrick on "Three Great Neurologists I Have Known." Speakers before the Chicago Neurological Society, November 16, included Drs Paul C. Bucy on "Ipsilateral Representation in the Motor and Premotor Cortex" and Mabel G. Masten, Madison, Wis., "Neurogenic Ulcers in Cerebral Lesions (Cushing's Syndrome)." At a meeting of the McDonagh Society for Clinical Research, November 17, among others, Drs Ernst Pribram and Stanley Fahlstrom spoke on "Studies in Arthritis and Arthrosis." The Chicago Pediatric Society was addressed, November 21, by Drs George Piness, Los Angeles, on "Food Factors in Allergy of Childhood," and Louis W. Sauer, "Whooping Cough Immunization." Dr Ernst Kraas, University of Frankfurt, Germany, spoke before the Physiology Journal Club, Northwestern University Medical School, November 16, on "Choice of Operation in the Surgery of the Stomach and Gallbladder." Dr William G. Rogers, among others, addressed the Chicago Gynecological Society, November 17, on "Rupture of the Fetal Liver," and Drs Beatrice E. Tucker and Harry B. W. Benaron on "Parasacral Anesthesia in Obstetrics." Dr Fred L. Adair was elected president. The health division of the Council of Social Agencies was addressed at its annual meeting, November 9, by Drs Frank J. Jirka, state health officer, Frederick Tice of the Municipal Tuberculosis Sanitarium, and Frederick O. Tonney of the Chicago Board of Health.

INDIANA

Hospital News—The William Ross Memorial Sanatorium, Lafayette, opened its fourth annual short course on tuberculosis, October 24, with Dr Walter H. Mytinger, superintendent, giving the opening address. Other speakers included Drs Willis D. Gatch, dean, Indiana University School of Medicine, Indianapolis, and Kennon Dunham, Cincinnati.

Society News—Dr Howard L. Stitt, Cincinnati, addressed the Dearborn-Ohio County Medical Society in Lawrenceburg, October 26, on "Bronchoscopic Lavage." At a meeting of the Jasper-Newton County Medical Society, October 28, Dr John H. Warvel, Indianapolis, discussed the importance of the laboratory in diagnosis of disease. Dr Cyrus C. Sturgis, Ann Arbor, Mich., conducted a seminar on anemia before the Elkhart County Medical Society, November 2.

IOWA

Report of Committee on the University Hospitals—A committee of nine, headed by Dr Elbert E. Munger, Spencer, was appointed last March by the legislature to investigate the causes and suggest remedies for the waiting list of indigent patients committed but not admitted to the University Hospitals in Iowa. The committee recently submitted a report to the legislature, convened in extra session. The list of waiting patients grew from sixteen Sept. 1, 1927, to 5,238 on Feb. 7, 1933. During the year ended June 20, 1932, there were 8,719 patients admitted to the University Hospitals, with an average hospitalization period of 177 days. There was an average daily number of patients in the hospitals of 4,926. The university is said to graduate each year twenty medical practitioners more than are actually required to care adequately for the sick. The establishment of suitable entrance requirements to reduce the average annual number of graduates to seventy-five was urged. This would reduce the amount of teaching material needed and thereby decrease the expenses of the medical school to the state. Admission to the University Hospitals is now governed by the quota plan, which provides that committed patients be admitted to the hospitals in proportion to the population of the counties of their residence instead of as the laws seem to contemplate, in proportion to the number of commitments. The committee of nine believes that this procedure will ultimately retard the admission of adequate material for the instruction of medical students, since the supervisors might preserve their quota by committing patients requiring a long period of care and provide for the treatment of accident and obstetric cases and those of acute illness in their home communities. In its recommendations, the committee urges that half the basic cost of hospitalization of indigents be charged to the counties of their residence, an adequate investigation to be made under the direction of the county board of supervisors before commitment to determine indigence. In this attempt to reduce the number of patients, the reduction should be made selective so that clinical material needs will not be jeopardized and so that the admission of patients who can be best treated there will not be delayed. The reduction of a physician's examination fee from \$5 to \$3 and the escort's wages from \$3 per day to \$2 is recommended. Principal recommendations of a minority report, not yet submitted, urge the removal of the medical college from Iowa City to Des Moines and advocate the repeal of the adult indigent law. Members of the committee of nine are Dr Oliver J. Fay, Des Moines, Dr Walter A. Sternberg, Mount Pleasant, Dr Arthur W. Erskine, Cedar Rapids, secretary, Senator G. W. Patterson, Burlington, Senator E. R. Hicklin, Wapello, Senator Morris Moore, Walnut, Paul L. Millhone, Clarinda, Representative John Speidel, Washington, and Dr Munger. These men were appointed by the governor, president of the senate, and speaker of the house of representatives.

KANSAS

Society News—Dr Claude C. Tucker, Wichita, discussed "Anal Fistula and Rectal Abscess" before the Butler-Greenwood County Medical Society in Augusta, October 13. The Sedgwick County Medical Society devoted its meeting, November 21, to a symposium on lesions of the hip, their diagnosis and cure, the speakers were Drs Arthur E. Bence, Edwin D. Ebricht and Charles R. Rombold, all of Wichita.

LOUISIANA

Protest Enlargement of Charity Hospital—Representatives of six independent hospitals of New Orleans adopted a resolution, November 3, protesting against the erection of a new twenty-six story building for Charity Hospital, mainly because the proposed plans call for the treatment of pay or part pay patients other than patients suffering from contagious diseases. The board of administrators of Charity Hospital is reported to have applied to the federal public works committee of Louisiana for an allotment of \$9,600,000 for this purpose. The resolution points out that, since the independent hospitals of New Orleans are charitable in purpose and not operated for profit, the inclusion of this service in Charity Hospital would be an invasion into the province of their services, as well as an unprecedented departure from the recognized functions of a state charity hospital. The decentralization of hospital care for indigent patients and provision for their care in smaller hospitals at focal points in the state would permit a decrease in the capacity of the present Charity Hospital, the resolution states, while if they were subsidized independent institutions in New Orleans could care for at least 400 more indigent patients. Copies of the resolution were sent to the

Federal Public Works Board of Louisiana, board of administrators of Charity Hospital proper departments in Washington, D C, Orleans Parish Medical Society, Louisiana State Medical Society, the daily press, Louisiana and American hospital associations, and the *New Orleans Medical and Surgical Journal*. The institutions represented in the resolution were Southern Baptist and French hospitals, Flint Goodridge Hospital of Dillard University, Hotel Dieu, Mercy Hospital-Somat Memorial and Touro Infirmary. A resolution, embodying similar objections, was adopted by the Calcasieu Parish Medical Society.

MASSACHUSETTS

Society News—Dr Winfred Overholser, assistant commissioner of the state department of mental diseases, was elected president of the Massachusetts Psychiatric Society at its recent annual meeting, succeeding Dr Morgan B Hodskins, Palmer. —Dr William D McFee, Boston spoke before the Lawrence Medical Club, October 18, in Lawrence, on "Physiotherapy in Relation to General Practice."

George W Gay Lecture—Dr Robert B Osgood, John B and Buckminster Brown professor of orthopedic surgery, emeritus, Harvard Medical School, Boston, gave the George W Gay Lecture on Medical Ethics at the school, November 2, his subject was "The Theology of Medicine." Dr John Homans, assistant professor of surgery spoke, November 9, on "The Care of the Patient" and Dr Elliott P Joslin, clinical professor of medicine, discussed the same subject, November 16.

MICHIGAN

Society News—A symposium on the treatment of fibroid tumors and bleeding during the menopause was presented before the Wayne County Medical Society, Detroit, November 13, by Drs John T Murphy, Toledo, and Jean P Pratt and George A Kamperman, Detroit. A symposium on peptic ulcer was given before the society, November 20 with Drs Patrick L Ledwidge, Osbourne A Brines, Clyde E Vreeland, George E McKean, all of Detroit, and Ambrose L Lockwood, Toronto, as the speakers. —The Detroit Obstetrical and Gynecological Society was addressed, November 7, by Drs Charles E Boys, Kalamazoo, on "Role of Supravaginal Hysterectomy in Gynecology, with Motion Picture Illustration of Author's Technique," and Howard H Cummings, Ann Arbor, "Weight Changes During Pregnancy." —At a meeting of the Detroit Pediatric Society and the American Academy of Pediatrics, December 6, Dr Louis H Newburg, Ann Arbor, will speak on nutrition.

Conference on Preventive Medicine—The establishment of whole time county health departments and the extension of preventive medical procedures into the offices of all cooperating physicians were the subjects of discussion at a state conference of the committee on preventive medicine of the Michigan State Medical Society in Detroit, November 15. Discussing these subjects were Drs Henry A Luce, speaker, house of delegates, state medical society, Stuart Pritchard of the Kellogg Foundation, Battle Creek, Louis J Hirschman, state advisory council, James D Bruce, University of Michigan Medical School, Ann Arbor, Bruce C Lockwood, Wayne County Medical Society, Albert M Wehenkel, and Henry F Vaughan, Dr P H, health commissioner of Detroit. Conferences on communicable diseases and tuberculosis were held in the morning. During the day the public health committee of the Wayne County Medical Society demonstrated how it serves to coordinate and supervise the health services which are a joint concern of the organized medical society and the department of health. The participation of cooperating physicians was shown by the East Side Medical Society of Detroit and the W K Kellogg Foundation demonstrated its application of the medical participation plan in Barry, Eaton and Allegan counties, where conditions are typically rural.

MINNESOTA

Society News—Speakers before the Hennepin County Medical Society, November 1, were Drs Walter J Marcle and Jay Arthur Myers, Minneapolis on diagnosis of tuberculosis and pneumothorax, respectively, November 6, Dr John S Lundy, Rochester, special methods of anesthesia. November 8, Drs Harold S Diehl and Frederic C Rodda, Minneapolis medical treatment of the common cold and the acute cold in infancy, respectively. Dr Louis M Warfield, Milwaukee will address the society in Minneapolis, December 4 on "Does the Heart Fail in Acute Infection." The society heard Leroy S Palmer, Ph.D, professor of agricultural biochemistry, University of Minnesota speak on the chemistry of foods with special reference to malnutrition and obesity, Drs James B Carey

and Chauncey A McKinley discussed malnutrition and obesity, respectively. —The Minnesota Academy of Medicine was addressed November 8 by Drs Arthur E Smith, Minneapolis, and Alexander R Colvin, St Paul on "The Eye in Cardiovascular Disease" and "Experiences in Surgery of the Colon," respectively.

NEBRASKA

Society News—Dr Leonard J Owen among others, addressed the Lancaster County Medical Society, Lincoln, October 17, on "Allergic Manifestations of the Skin." —At the October meeting of the Madison County Medical Society in Norfolk, Drs Abram E Bennett and Leon S McGoogan, Omaha, spoke on epidemic encephalitis and purpura in pregnancy, respectively. —Harry N Boyne, D.D.S., Council Bluffs, and Dr Richard Young, Omaha, addressed the November meeting of the Otoe County Medical Society, Nebraska City, on "Early Diagnosis and Eradication of Oral Pathology" and "Pernicious Anemia Neurologic Complications and Treatment" respectively. —Drs Ira H Dillon and Ernest H Decker, Topeka, Kan, among others, addressed the autumn meeting of the Third Councilor District Medical Society, Humboldt, October 19, on "Interpretation and Treatment of Subjective Eye Symptoms" and "Diagnosis and Treatment of Common Skin Diseases," respectively. —A symposium on pneumonia was presented before the Omaha-Douglas County Medical Society, November 14, by Drs Frank M Conlin, Joseph A Weinberg, Howard B Hunt, Wilson B Moody, Abraham S Rubnitz and James P Tollman.

NEW JERSEY

Society News—Dr Howard Fox, New York, addressed the Bergen County Medical Society, October 10, on "Diagnosis and Treatment of Some Common Skin Diseases," and the county medical relief plan was discussed. —Dr Benjamin F Buzby, Camden, addressed the Gloucester County Medical Society, Pitman, September 21, on osteomyelitis.

Cancer Week in Newark—Exhibits and lectures on cancer for both the medical profession and the public, December 5-7, will mark the observance of Cancer Week by the Essex County Medical Society in Newark at the Academy of Medicine of Northern New Jersey. At a public meeting the evening of December 5, speakers will be Drs Jonathan M Wainwright, Scranton, Pa, chairman of the cancer commission of the Medical Society of Pennsylvania, on "What Has Been Done and What Can Be Done in Cancer Control," Edward J Ill, Newark, "Progress of Our Cancer Knowledge," and William H Areson, Upper Montclair, "Reasons for Cancer Control." The regular meeting of the county society will be held December 7, with Dr Harrison S Martland, medical examiner of Essex County as the speaker, on the present status of theories of the cause of cancer and on metastasis. About fifty exhibits will be presented by individual physicians and eighteen by hospitals.

Annual Health Review—Death rates for tuberculosis, typhoid and diphtheria and infant mortality reached new low records for New Jersey during the year ended June 30, 1933 according to *Public Health News* for October. The rate for diphtheria was 0.02 per thousand of population, for typhoid, 0.006, and for tuberculosis, 0.6. The infant mortality rate was 50. A new law regulating production and handling of milk products was put into effect during the year and minimum standards of sanitation for roadside food stands and similar places were adopted. The first year under a law requiring dog bites to be reported to local health authorities brought records of 7,809 persons bitten. Among the dogs were 222 affected with rabies three of the victims died. Laboratory service was greatly increased during the year according to the report. A 57 per cent increase in the number of samples of water and sewage tested was reported. More than 41,000 Wassermann tests were made. A new law places on the department the duty of licensing barbers and inspecting barber shops.

NEW MEXICO

State Health Survey—Carl Buck, Dr P H, field representative of the American Public Health Association, is beginning a health survey of New Mexico under the auspices of the New Mexico Tuberculosis Association. The survey has been endorsed by the New Mexico Medical Society and other health organizations and the U S Bureau of Indian Affairs and the American Social Hygiene Association are cooperating in the work. Dr Walter J Clarke, New York, of the latter organization has begun work on the social hygiene aspects. A one-day census of venereal disease under treatment is to be made December 1, with the cooperation of the U S Public Health Service.

NEW YORK

District Meeting—The annual meeting of the Second District Branch of the Medical Society of the State of New York was held in Garden City, November 16. A symposium on acute conditions in the abdomen was presented from the points of view of the surgeon by Drs. John E. Jennings, Brooklyn, and James Wesley Bulmer, Glen Cove, the internist, by Drs. Carl Boettiger, Long Island City, and Irving Gray, Brooklyn, the gynecologist, by Dr. Charles A. Gordon, Brooklyn, the urologist, by Dr. James W. McChesney, Baldwin, the neurologist, by Dr. Orman C. Perkins, Brooklyn, and the pediatrician, by Dr. Miner C. Hill, Oyster Bay. Dr. William W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association, Chicago, gave an address at the evening banquet on control by the medical profession of the practice of preventive medicine.

New York City

Second Harvey Lecture—William Mansfield Clark, Ph.D., De Lamar professor of physiologic chemistry, Johns Hopkins University School of Medicine, Baltimore, delivered the second Harvey Lecture at the New York Academy of Medicine, November 16, on "The Potential Energies of Oxidation-Reduction System and Their Biochemical Significance."

Hospital News—A symposium on medical education was presented at Mount Sinai Hospital, November 6, by Drs. G. Canby Robinson, John H. Wyckoff, Jr., and Willard C. Rappleye. Beth Israel Hospital and the Jewish Maternity Hospital have merged to form what will be known as the Beth Israel Medical Center. Maternity Hospital is to have a new building adjacent to the comparatively new building of Beth Israel.

Dr. Welch Retires as President of Rockefeller Board—Dr. William H. Welch, Baltimore president of the board of scientific directors of the Rockefeller Institute for Medical Research since it was founded in 1901, has retired. He was elected member emeritus of the board a new office. Dr. Welch is now 83 years old. Dr. Theobald Smith, Princeton, N. J., director emeritus of the department of animal pathology of the institute, succeeded Dr. Welch.

Society News—The section on orthopedic surgery of the New York Academy of Medicine held a joint meeting with the Orthopedic Club of Philadelphia, November 17. Drs. Arthur Bruce Gill and James T. Rugh, Philadelphia, presented papers on "Treatment of Intracapsular Fractures of the Neck of the Femur" and "Injurious Effects of Menstruation on Inflammatory Joint Processes," respectively. Dr. Francis Carter Wood addressed the New York Roentgen Society, November 20, on "Recent Studies on the Etiology of Cancer." A symposium on gastric neoplasms was presented at a joint meeting of the section on surgery of the New York Academy of Medicine with the New York Pathological Society, November 23, by Drs. Arthur Purdy Stout, Ross Golden and Fordyce B. St. John. Dr. Nathan B. Van Etten addressed the Medical Society of the County of Queens, October 31, on "Problems of the Young Physician." A round table conference on diabetes mellitus made up the program of the Medical Society of the County of New York, October 30, speakers were Drs. Rollin T. Woodyatt, Chicago, Priscilla White, Boston, and Herman O. Mosenthal and Henry Rawle Geyelin, New York.

OHIO

Charity Surgical Treatment Limited to Emergencies—The council of the Toledo Academy of Medicine at a recent meeting passed a resolution recommending a limitation of staff service in Toledo hospitals to acute emergency operative cases during the economic depression. The matter was referred to the academy's hospital relations committee, which endorsed the council's policy and recommended that any physician who did not adhere to the spirit of the decision be requested to resign from the academy. The eye, ear, nose and throat section of the society almost unanimously signed a pledge to do no more "routine" but only emergency surgery in the hospital clinics.

PENNSYLVANIA

Society News—A symposium on cancer was presented at the meeting of the Dauphin County Medical Society, Harrisburg, November 7 by Drs. Justin Loomis Christian, Park A. Deckard, Harvey F. Smith, William M. Kunkel and George R. Moffitt. The Western Pennsylvania Eye, Ear, Nose and Throat Society was organized at a meeting in Indiana, October 19. Drs. George M. Coates, Philadelphia, and George H. Shuman, Pittsburgh, addressed the meeting on sinus-disease and slit lamp microscopy, respectively. Drs. Charles Geschickter

and Murray M. Copeland, Baltimore, addressed the Fayette County Medical Society, Uniontown, November 2, on tumors.

Advisory Committees—The mayor of Pittsburgh some months ago appointed an advisory committee on health problems, which has now outlined its program of study and chosen subcommittees (THE JOURNAL, May 13, p. 1549). The problems selected for study and the chairmen of committees are air hygiene, Dr. Samuel R. Haythorn, venereal disease control, Dr. Charles B. Schildecker, water control, C. F. Drake, superintendent of the filtration plant, Negro health, Dr. George E. Martin, housing survey, Mr. Charles F. Lewis, director of the Buhl Foundation, preschool child health, Dr. Carl K. Wagener, municipal waste disposal, and squatter control. Committees for the last two subjects named have not been announced.

Philadelphia

Hospital News—A new unit of the Philadelphia Skin and Cancer Hospital was opened, October 5. Dr. Albert Strickler is medical director. The federal public works administration has allotted \$2,250,000 for completion of the Naval Hospital. It is now about one third finished.

Society News—The program of the Philadelphia County Medical Society, November 22, was devoted to consideration of minor surgical conditions met by the general practitioner. Speakers were Drs. Eldridge L. Eliason, on "Finger Infections," Edward T. Crossan, Acute Ankle Sprains, and George P. Muller, "Cervical Adenitis." Dr. Myer Solis Cohen, among others, addressed the Philadelphia Pediatric Society, November 14, on "Acute Interstitial Pneumonia A Peculiar Form Not Mentioned in Textbooks," with report of eight cases.

TEXAS

Directory of Licensed Physicians—The Texas State Board of Medical Examiners has published a directory of all licensed physicians in the state as of October 1. It is planned to publish such a list each year, according to Dr. Thomas J. Crowe, Dallas, secretary of the board. The booklet is available for 25 cents per copy, to cover cost of printing and mailing.

District Meeting—The Northwest Texas District Medical Society and the Fort Worth Medical and Surgical Clinics held a joint meeting in Fort Worth, October 10-11. Clinics were held at St. Joseph's, Methodist and the City-County hospitals and addresses were given, among others, by Drs. William B. Carrell, Dallas, "Prevention of Deformity Following Polio-myelitis," John Harold Turner, Houston, "Prostatic Resection Indications and Limitations," and George V. Brindley Temple, "Complications of Peptic Ulcer." Drs. Bransford Lewis, St. Louis, and Paul M. Bassel, Temple, made addresses at an evening banquet on "Vocations and Avocations of the Doctor" and "Narcolepsy," respectively.

Society News—Drs. Charles W. Stevenson, Wichita Falls, and Roy L. Fisher, Frederick, Okla., addressed the Wichita County Medical Society in Wichita Falls, September 12, on epidemic encephalitis and sacrococcygeal tumors, respectively. Dr. Thomas H. Cheavens, Dallas, addressed the Ellis County Medical Society, Waxahachie, in September, on the brain and the nervous system. Drs. Edward H. Schwab, Jr., Galveston, and Samuel D. Weaver addressed the Dallas County Medical Society, October 24, on treatment of craniocerebral injuries and hypertension, respectively. Dr. Philip C. Jeans, Iowa City, was guest speaker at a meeting of the Texas Pediatric Society, October 28, in San Antonio, on "Practical Aspects of Nutrition in Childhood." Dr. Quittman U. Newell, St. Louis, addressed the Texas Association of Gynecologists and Obstetricians at San Antonio recently, on advances in the management of sterility and the Harris County Medical Society, Houston, on the prevention of uterine cancer. Dr. Alfred I. Folsom, Dallas, was elected president of the Texas Surgical Society at its semiannual session in Fort Worth, October 16-17. Dr. Hugh H. Trout, Roanoke, Va., was a guest speaker on "Modern Methods of Surgery to Relieve Adhesions Around the Heart."

WEST VIRGINIA

Society News—Dr. Charles Geschickter, Baltimore, addressed the Ohio County Medical Society, Wheeling, November 3, on "Tumors of the Breast." Dr. Louis H. Clerf, Philadelphia, spoke, November 17, on "Diagnosis and Treatment of Pulmonary Abscess and Bronchiectasis." Dr. William R. Laird, Jr. Montgomery, addressed the Fayette County Medical Society, Oak Hill, October 10, on etiology and pathology of acute appendicitis. At a joint meeting of the Parkersburg Academy of Medicine and the Cabell County Medical Society

in Parkersburg, October 5, Drs Frank C Hodges and John H Steenberg, Huntington, discussed sudden cardiac deaths and office practice of gynecology, respectively—Dr Arthur E McClue, state health commissioner, addressed the Mercer County Medical Society, Bluefield, October 26, on problems of public health work in relation to private practice of medicine

GENERAL

Physical Therapy as Related to Proctology—A committee has been organized by the American Proctologic Society to investigate the status of physical therapy as it applies to proctology. Dr Herbert I Kallet Detroit, has been named chairman, and other members of the committee include Drs Harry Z Hishman, Philadelphia, Emmett H Terrell, Richmond, Va., E Jay Clemons, Los Angeles, and Frank C Yeomans, New York.

Conference on Birth Control and National Recovery—A three day conference on birth control and national recovery will be held in Washington, January 15-17, under the auspices of the National Committee on Federal Legislation for Birth Control. The preliminary program lists the following subjects for discussion: population problems, religion and moral questions, the family and community welfare, health and economic recovery, contraceptive technique and standards, birth control clinics and federal legislation.

Change of Status in Licensure—The Georgia State Board of Medical Examiners reports the following:

Dr William A. Starnes, Atlanta, license revoked, October 12 for violation of the Harrison Narcotic Act.

The State Board of Health of Kentucky reports the following action:

License of Dr Earle J. Brashear, North Pleasureville, revoked for violation of the Harrison Narcotic Act.

The Colorado State Board of Medical Examiners reports the following action:

Dr Taber A. Darling, Fort Lupton, license revoked October 3 for the unlawful sale of narcotics.

The California State Board of Medical Examiners reports the following action:

Dr Rudolf I. Rohlfing, Los Angeles, license revoked following a hearing on charges that he practiced under a name other than his own. Dr Rohlfing was connected with the Special Cancer Clinic in Los Angeles.

Neuropsychiatric Meeting—The Central Neuropsychiatric Association held its annual meeting in Cleveland, October 13-14, at the Cleveland Clinic and the Lakeside Hospital, where Cleveland members demonstrated their clinical and research facilities and activities. Among the presentations were:

Dr Wallace B. Hamby, Tumors of the Spinal Canal in Childhood
Dr Ursus V. Portmann, X-Ray Treatment of Brain Tumors
Dr John H. Nichols, Congenital Cerebral Atrophy
Dr Richard E. Stout, Psychoses of Myxedema
Dr James D. Pilcher, Erythroblastosis Neonatorum Showing Kernicterus

Dr Albert T. Steegmann, Recent Contribution to the Histopathology of Epilepsy

Dr Samuel C. Lindsay, Neuropsychiatric Trends

Dr Hans H. F. Reese, Madison, Wis. made his address as retiring president at the annual dinner and Dr T. Wingate Todd, Cleveland, spoke on "Neuropsychologic Expressions of Infantile Disorders." Dr H. Douglas Singer, Chicago, was elected president and Dr Henry W. F. Woltman, Rochester, Minn., secretary.

Decrease in Number of County Health Units—According to *Public Health Reports* in a discussion of full time health service in rural areas during the period Jan. 1, 1932-Dec. 31, 1932, a net loss of thirty-five full time health units was recorded during the year, when this service was established in nine units and discontinued in forty-four. The largest gain in one state was that of four units in Michigan, while the greatest loss was sustained in Oklahoma, where all nine counties in the state having this service discontinued it. Delaware led in the percentage of rural population under full time health service, all three of its counties having been provided with local full time health organization by the state. Of the states in which the local governmental units maintain the health organizations with or without assistance from the state health department or other sources, Maryland had the highest percentage (95.3) of rural population under full time health service. Of the 581 counties, townships or districts with full time health service, 551, or 94.8 per cent, were receiving financial assistance from one or more of the following agencies: the state board of health, the U. S. Public Health Service, the Rockefeller Foundation, the American Red Cross, the American Women's Hospital Fund, the Rosenwald Fund, the Commonwealth Fund and the Milbank Fund. On Dec. 31, 1932, there were twelve states which did not have local full time health service.

Medical and Surgical Association of the Southwest—The nineteenth annual meeting of the Medical and Surgical Association of the Southwest will be held in El Paso, Texas, December 7-9 at the Hotel Hussman. Discussions for the first day will be on allergy, for the second on tuberculosis, and for the third, on goiter. Among physicians who will deliver addresses are:

Orville H. Brown, Phoenix, Ariz., Food Allergy
Redford A. Wilson, Tucson, Ariz., Hay Fever
James E. Sherman, El Paso, Allergy in Tuberculosis
Warner Watkins, Phoenix, Chronic Inflammation in the Lungs with Special Reference to Silicosis
John Rosslyn Earp, Santa Fe, N. M., Childhood Tuberculosis as a Public Health Problem
Charles W. Mills, Tucson, Treatment of Cavities
Sturley C. Davis, Tucson, Hypothyroidism
John W. Cathcart, El Paso, X-Ray and Radium Treatment of Exophthalmic Goiter
Gottlieb Werley, El Paso, The Heart in Thyroid Disease

Dr Martin B. Tinker, Ithaca, N. Y., will be the guest speaker, on "Tuberculosis and Malignancy of the Thyroid." Thursday evening, December 7, there will be a clinical demonstration at William Beaumont General Hospital and the annual dinner will be held Friday evening, when Dr. Walter A. Gekler, Albuquerque, N. M., the incoming president, will make his official address.

CANADA

Officers of Medical Council—Dr Robert H. Arthur, Sudbury, Ont., was recently elected president of the Medical Council of Canada, succeeding Dr W. A. Thomson, Regina. Dr Walter S. Galbraith, Lethbridge, Alta., was elected vice president and Dr John Fenton Argue, Ottawa, registrar.

Personal—Dr Robert E. Wodehouse, Ottawa, has been appointed deputy minister of pensions and national health. Dr Wodehouse was at one time a district medical officer of health in Ontario and was recently executive secretary of the Canadian Tuberculosis Association. He succeeds Dr John A. Amyot.

Neurological Institute at McGill—The governor general of Canada, Lord Bessborough, laid the cornerstone of the new Neurological Institute at McGill University, Montreal, at the annual ceremonies on Founder's Day, October 6, the birthday of James McGill. Various donors have provided the fund for building of the institute, the largest among them being the Rockefeller Foundation, which contributed \$1,232,652. Dr Wilder G. Penfield, professor and head of the department of neurology at the university faculty of medicine, is to be head of the institute (THE JOURNAL, June 18, 1932, p. 2220).

Society News—Dr Ernest L. Garner, Vancouver, B. C., addressed the Vancouver Medical Association October 3, on fractures, and Dr Frederic J. Brodie, November 7, on injuries to the brain. Dr James C. McMillan, Winnipeg, was elected president of the Manitoba Medical Association at the annual meeting in Winnipeg, September 7-9. Guest speakers included Drs Roscoe R. Graham, Toronto, on "Surgical Therapy in Biliary Disease" and John C. Meakins, Montreal, "Bronchiectasis and Its Treatment." Dr Thomas A. Ledbetter, Yarmouth, was elected president of the Nova Scotia Medical Society at the annual meeting in Halifax, September 5-6.

Government Services

Federal Malaria Control

Ten million dollars will be expended in the federal program of malaria control to be launched by the U. S. Public Health Service this month, it is reported. The work will be carried on in twelve states: Florida, Arkansas, Alabama, Louisiana, the southeastern portion of Missouri, Mississippi, North Carolina, South Carolina, Georgia, Tennessee, Texas and Virginia. Dr Thomas H. D. Griffiths, who has been conducting a preliminary survey in Florida for the past year, will supervise the campaign, which is planned to begin in the counties of western Florida. The plan, approved by the Federal Emergency Relief Administration, provides that while the public health service will cooperate in technical direction and will detail medical and engineering officers for duty in the states, each state department of health is ultimately to assume direction of the work. Surveys conducted by Dr Griffiths in eight of the most heavily infected counties in Florida reveal that more than 5 per cent of the 10,000 school children examined have shown malarial infection; this number not including those who were actually suffering from acute attacks of malarial fever.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov 4, 1933

The Control of Measles

The London County Council, which now controls almost all the hospitals for infectious diseases in the metropolis, has issued a comprehensive report on the measles epidemic of 1931-1932, in which is shown the value of the recently introduced serum treatment both as a prophylactic agent and in the attenuating of attacks. About six years ago, several animal serums were available for the treatment of measles. A trial of three of these was made and the results were compared with those of the serum of human convalescents in preventing the disease. Injection of the three animal serums into susceptible "contacts" was followed by the development of measles in 57, 60 and 100 per cent of the cases, respectively, while injection of human convalescent serum was followed by measles in only 43 per cent. As a result of these experiments the use of animal serum was abandoned in the London fever hospitals and it obtained no vogue in this country. The haphazard way in which various so called immune serums have been administered in measles prophylaxis on the European continent is open to criticism. On the one hand, sufficient care is rarely taken to ascertain whether effective exposure to measles has taken place or whether the patient has had a previous attack, and, on the other hand, control experiments are usually inadequate or are omitted altogether. In the earlier experiments in London, alternate contacts of approximately the same age, who occupied beds at similar distances from the infecting patient, were inoculated with doses adjusted to body weight, but even then unexpected and uneven results were encountered, depending on such variables as different bed spacing, season, duration of the exposure, degree of catarrh in the primary case, and nursing efficiency. To insure a sufficient margin of safety a dosage scheme more generous than that recommended by most continental and American workers was adopted. A minimum injection of 5 cc of serum was given, and from three years onward the dose was reckoned in cubic centimeters by multiplying the age in years by 2. This increased dose was given to overcome the occasional discrepancy between body weight and age, as probably the final concentration of antibodies in the circulation is the factor that determines success. The injections were given intramuscularly as soon as possible after the contact, certainly before the sixth day, if complete protection was desired. If attenuation was aimed at the same dose was given between the sixth and the ninth day, or half the dose was injected in the first five days, with similar results and economy in the use of serum. With the doses mentioned, complete protection resulted in the last hundred prophylactic inoculations.

POOLED ADULT SERUM

As adequate supplies of convalescent serum were not available when needed most, a supply of pooled adult serum was organized and its value ascertained. An appeal for blood was made to the medical and nursing staffs of the council's hospitals. Great care was taken to make certain that the history of a previous attack of measles was authenticated. Nevertheless from 3 to 5 per cent of the donors had never had the disease. On the other hand, as they were actively engaged in infectious disease work and subject to contact with measles patients, the antibody content of their blood was probably above the average. Comparison was made between 1475 cases in which adult serum was injected and 680 cases in which convalescent serum was injected. The figures were analyzed by an expert statistician.

Mr W T Russell, of the department of statistics at the London School of Hygiene and Tropical Medicine. Convalescent serum was found to be a more powerful prophylactic than adult serum for each age group, but the difference was of statistical significance only in respect to children under the age of 5 years and was greatest in the age group of 1 to 3 years, at which period susceptibility is highest. After the age of 5 years there was nothing to choose between the two serums.

It was found that protection could almost certainly be obtained if, during the first three days after exposure, 4 cc. of adult serum or 2 cc of convalescent serum, multiplied by the age of the child, was injected intramuscularly, with minimum doses of 10 cc and 5 cc, respectively. Attenuation was more problematic. If these doses were given from the sixth to the ninth day, attenuation followed in only about a third of the cases and prevention in the remainder, excepting less than 1 per cent who were unaffected. Approximately the same attenuation, with proportionate economy, was attained from half doses given before the sixth day. More work is required to ascertain the dosage most likely to produce attenuation. Attenuation has the advantage that, however mild and fleeting the attack of the disease, permanent immunity follows, whereas, if the disease is entirely prevented, the immunity lasts only a few weeks.

Sugars Made in the Laboratory

Addressing the British Association of Chemists, E C C Baly, professor of inorganic chemistry in the University of Liverpool, made the stupendous announcement that by the action of light, as in the living plant, he had produced sugars in the laboratory. The process consisted of two parts: the photochemical conversion of carbonic acid into what might be called active formaldehyde, and the polymerization of the formaldehyde into sugars. The proof of the formation of the sugars by photosynthesis in the laboratory was complete. This was achieved with nickel carbonate (which when irradiated by light was converted into nickelic oxide and active formaldehyde), a process exactly analogous to that of the living plant. Other workers had failed to confirm the successful results obtained at Liverpool, and this could be explained. If impurities were present in the first of the two stages effected by light, the substance produced reverted to carbonate as fast as it was formed. Photosynthesis had also been achieved by the irradiation of cobalt carbonate, and the proof of that phenomenon was free from any doubt. The two-stage theory of activation thus reached offered a satisfactory explanation of all the heretofore unexplained observations made with living plants.

The Indian Medical Service Endangered

The desire of the British government to give self government to India has encountered great difficulty in consequence of the action of Indian extremists, who, notwithstanding the benefits of British rule, are fanatically hostile to any British rights whatever. In a previous letter the desire to exclude British physicians from practicing in India was shown. Great concern is now felt for the greatest colonial medical service in the world, the Indian Medical Service, which not only introduced European medicine into India but founded medical schools there and played a great part in the creation of tropical medicine. The British Medical Association has prepared a memorandum for submission to the India Select Committee (which is working out the scheme of self government for India) expressing the view that disintegration of the Indian Medical Service is bound to follow the proposals made. It will cease to attract physicians of the highest attainment. The main contentions of the association are that 1 Successful recruitment of the service cannot be maintained if the civil branch of the service is discontinued (This refers to the fact many of the prizes of the service are civil medical appointments) 2 The scheme for employing

British physicians for contract service in the respective provincial medical services will not be useful. 3 Medical provision in India, including administration, teaching and public health, should include a due proportion of British personnel. 4 The women's medical service should be expanded and should include a due proportion of British medical women for teaching, administration and research. It is further pointed out that under the proposals a military reserve of British physicians would not be available in time of emergency or war, also that adequate medical attendance on British officers and their families by British physicians would not be insured.

Tubercle Bacilli in the London Milk Supply

An important report on the milk supply of London has been made to the central public health committee of the London county council. An entirely new position has arisen from the practice adopted in recent years of receiving country milk at depots, where it is bulked and transported to London in large glass-lined tanks, each holding about 3,000 gallons. As these tanks contain milk from many different herds, the addition of tuberculous milk from one farm infects the whole. The first examination of ten road and rail tanks showed that all contained living virulent tubercle bacilli. The results of the examination of London milk show that in the prewar period from 1907 there was a steady decline in samples found to be tuberculous from 11.6 to 7.9 per cent. In the earlier war period the percentage continued to fall but rose again in 1916 and attained a maximum about equal to that of the prewar period. Then it fell rapidly for a decade and reached the unprecedented low level of 2.6 in 1922. But since then it has risen steadily until now it is back nearly to its old figure: the percentage in 1932 being 9.3 for can milk and 10.9 for all samples, tank and can. About 40 per cent of London milk now arrives in tanks. The latest figures for tank milk (for the quarter ended March 31, 1933) show that, of forty-one samples, thirty-four, or 83 per cent, contained tubercle bacilli.

PASTEURIZATION

But these figures apply only to the milk on arrival in London. Practically all the tank milk comes to the big dairy firms, where it is pasteurized on arrival. An examination for the purpose of this special investigation of 282 samples purchased over the counter showed that nine, or 3.2 per cent, contained tubercle bacilli. These samples included milk sent to London both in tanks and in cans and the presumption is that those containing tubercle bacilli had not been pasteurized, at least not effectively. It is now believed that 90 per cent of the milk supply of London is pasteurized. While there is no reason to believe that commercial pasteurization is not, in the hands of many firms, equivalent to pasteurization as required by the ministry of health, the process is uncontrolled to the extent that no public authority gives a guaranty, as it does in the case of milk sold as 'pasteurized,' that the plant has been inspected and approved.

The committee recommended that copies of the report be forwarded to the minister of health and the minister of agriculture, that the appropriate minister should urge on the county councils concerned the great importance of insuring a milk supply free from tubercle bacilli and other contaminating organisms and that the ministers be asked to consider what action should be taken, or further powers obtained, in order to overcome the difficulties created by modern methods of milk transport.

The Problem of Mental Defectives

Lecturing at the London School of Hygiene and Tropical Medicine Dr Cyril Burt, professor of psychology at University College London said that on the main question of sterilization every one was agreed. But he did not think that it would do much to solve the problem of the mental defective. How many children in the London schools for defective children

had defective parents? The majority were from temperamentally unstable or dull parents. If an attempt was made to sterilize all the "carriers" of mental deficiency, about a fifth of the population would have to be sterilized. That would be ludicrous. No single remedy would be sufficient to deal with the whole of the problem. Professor Burt advocated mental inspection in addition to the present medical inspection of school children. What was wanted was a population of mind power rather than man power. A real survey of the whole population was needed. Mental deficiency was actually on the increase in rural areas, which had a larger proportion of defectives than the towns. Lured by the attractions of the cities, people had been flocking into them in the last fifty or sixty years, leaving all the dull yokels behind. There they had remained, and inbreeding no doubt aggravated the dullness. In Warwickshire, where Shakespeare came from, it had been found that nearly 4 per cent of the rural population of the county were mental defectives. In the village from which Shakespeare emerged, three surnames accounted for 70 per cent of the population which showed the enormous extent of inbreeding.

PARIS

(From Our Regular Correspondent)

Oct 11, 1933

The Examination of Automobile Drivers

A convention was held in Paris, during the annual automobile show, to consider the problems affecting the "safety of the highways." In addition to discussions about automobile brakes, modes of illumination, signals and road signs, an entire session was devoted to discussing the medical examination of drivers of automobiles. Numerous accidents are, no doubt, due to the bad physical condition of the drivers manifested in such ways as poor vision or hearing, dizziness due to circulatory disorders, epilepsy, nervous disorders or alcoholism. As far back as 1923, the Academy of Medicine demanded that persons affected with serious organic defects be not permitted to drive an automobile. That resolution had no direct effect. Mr Andre Tardieu, during the period that he served as minister of public works, was asked, in 1927, on the floor of parliament, by a member of the chamber of deputies, whether it was not possible to require a medical certificate attesting to the competence of every person who drives an automobile. At that time there were more than 300,000 automobile drivers, and Mr Tardieu said that such an examination, although desirable, was practically impossible. He emphasized that if the requirement should be made retroactive it would take several years and necessitate the mobilization of more competent experts than the country could furnish. It was decided therefore to subject to examination only such persons as became involved in automobile accidents, the purpose being to discover whether they were suffering from any physical defect that would render their driving dangerous. The permit to drive was withdrawn from persons who had driven while in a state of intoxication, as established by the decree of 1928. In June, 1930, the Academy of Medicine renewed its demands. Acting on a report of Dr Claude, it demanded that every automobilist on whom any penalty whatever is imposed, even though only because of having exceeded the speed limit, be required to submit to a mental examination.

As of Aug 1, 1930 the minister of public works who has charge of everything pertaining to the highways, decided that a medical examination should be required of all persons requesting a permit to drive large public vehicles. The examination to be given by one or a group of physicians designated by the prefect of the department. In 1931 the Academy of Medicine requested that this examination be construed to include drivers of all vehicles carrying more than eight persons and

that it be renewed every two years for public corporations and every year for private enterprises. In Paris, the prefecture of police imposes a rigorous examination on all drivers of autobusses, the certificate based on such examination being subject to renewal periodically. The results have been excellent, for the Paris autobus company, since the introduction of these regulations, has observed that accidents caused by its vehicles have diminished by 16 per cent and that, in indemnities paid to victims, it has saved 1,500,000 francs (\$90,000). The drivers of taxis have not yet been made subject to this examination, but demands are heard on all sides that the examination should include them. Of thirty-six taxicab drivers subjected to an examination by Dr Toulouse, at the Psychiatric Institute of the Hopital Ste Anne, after having become involved in accidents, ten were found to be affected with dementia paralytica, twelve with psychasthenia associated with impulses and obsessions, two with alcoholic dementia, two with epilepsy, two with toxicomania, four with alcoholism, and three with dementia praecox.

The convention on the Safety of the Highways heard Dr Levy-Valensi report all these facts. He referred to the research of Professor Tanon, who has shown that attacks of vertigo may be observed, on the highways, in drivers who have gradually been overcome by exhaust gases in closed automobiles, these gases filtering in through the cracks in the floor of the car, and who has pointed out also that previous ingestion of alcoholic beverages makes a driver more sensitive to this type of intoxication. He emphasized the necessity of eliminating persons with but one good eye, as is done in Belgium. Mr Levy-Valensi concludes that the following classes should be refused permits to drive: (1) persons affected with progressive diseases of the nervous system, and those whose permanent lesions are incompatible, even after correction with an apparatus, with the proper management of an automobile, (2) persons subject to attacks of hysteria, (3) all epileptics, (4) all psychopaths, with the exception of a few "intermittents," who should be subjected to frequent examination, if they are allowed to drive, and (5) chronic alcohol addicts, who are subject to repeated attacks of drunkenness—to which the convention added heart patients and persons subject to attacks of angina pectoris. It was proposed that permission to drive be refused to applicants more than 50 years of age, for after that age one cannot count on a good training of the reflexes. The convention, at which automobile manufacturers and their representatives predominated, took a peculiar attitude toward the discussions. It was apparent that the convention was not favorable, on the whole, to any restrictions that would be likely to diminish the number of automobile buyers. The majority of the persons present objected to nearly all the measures proposed on the subject by Dr Levy-Valensi, Dr Godlewski and Dr Balthazar. It rejected in a formal manner the imposition of periodic examinations on drivers of other than trucks and large public autobusses. It favored a psychotechnic and medical selection only for professional drivers and a periodic revision of the administrative list of defects constituting inaptitude. The daily press has been evasive on the subject. The medical writers of the political journals, who had prepared for the occasion a number of articles designed to enlighten the public on the subject, were unable to publish them, as they were rejected by the managers of the newspapers at the request of the syndicate of automobile manufacturers, who are big advertisers, for the reason that, in the present state of affairs, it was not desirable that anything should intervene, in the form of a medical examination, that would interfere with the sale of automobiles. The only hope on which one can base suitable control, so far as drivers of private cars is concerned, lies in the accident insurance companies, who are considering the possibility of requiring

a medical certificate of aptitude before approving an application for accident insurance. But even this hope is illusive, for all the accident insurance companies are fierce competitors of one another, and an understanding in this matter will be difficult to effect.

International Convention on Combating Tuberculosis

The annual session of the council of the *Union internationale contre la tuberculose*, the president of which is Professor Nolen of the Netherlands, was held in Paris, and fourteen countries were represented. A session of the council was held at the headquarters of the Union, 66 Boulevard St. Michel, in the forenoon. The scientific session was devoted to the presentation of a paper by Dr A. Saenz on "Tuberculous Bacillæmia." This paper was followed by a general discussion, in which Prof. Leon Bernard, general secretary of the Union, Professor Valtis of Greece, Professor Bezançon of Paris, Prof. Yevrem Nedelkovitch of Yugoslavia, and others participated. The next international conference will be held in Warsaw, Sept. 4-6, 1934, and the following topics have been placed on the agenda: "Biologic Variations in the Tuberculous Virus," Professor Karwacki, Poland; "The Types of Osteo-Articular Tuberculosis and Their Treatment," Professor Putti, Italy; and "The Use of Dispensaries for the Treatment of the Tuberculous," Prof. Leon Bernard, France. An address on the "Supplementary Measures in Combating Tuberculosis in a Rural District in Which the Mortality Rate is Low" will be delivered by Mr. John A. Kingsbury, United States. Following the precedent adopted at the convention held at Oslo and The Hague, ten speakers will be chosen from various countries for each topic, in addition to the principal speaker.

BERLIN

(From Our Regular Correspondent)

Oct. 9, 1933

Alcoholism and Heredity

Addressing the Freiburg Medical Society, Professor Seiffert of the Freiburg Hygienic Institute reported a study of large groups of children (1,700 from the Kaiserstuhl region and 2,000 from the Margrave territory) as to whether alcohol has any hereditary influence on the gonads. These two regions are well known because of the wines produced there. Records were made with regard to height, weight, chest girth, constitutional type and qualities, and performance in the 60 meter dash. The figures obtained were compared with figures from other regions, as from Freiburg itself. It was found that the children from the grape-growing regions were better developed than the children constituting the control material. Seiffert draws the conclusion that alcohol has no practical importance from the standpoint of its hereditary influence on the gonads. Later, the genealogies of twenty heavy drinkers who were treated in sanatoriums were studied. It was ascertained that heavy drinkers who had no bad hereditary tendencies had healthy children from healthy wives but that with heavy drinkers who displayed such hereditary tendencies it was different. In the latter case, differences were manifest, the nature of the differences depending on whether the bad hereditary influence emanated from one or from both parents. If only from one parent, the research revealed that the effects on the children were not particularly marked, but if from both parents, from 30 to 60 per cent of the children were affected. The conclusion may be drawn that it should be made the rule to compel an alcohol addict to accept treatment on the basis of a physician's advice and not on the basis of a court decision, and that if there is evidence of a marked hereditary trend toward alcoholism the alcohol addict should have a guardian appointed. Heavy drinkers with a marked hereditary trend toward alcoholism, who

periodically become intoxicated, should not be placed in expensive sanatoriums but in a workhouse, where they can earn their living. To sterilize the heavy drinkers in a sanatorium would not help much, since they are usually advanced in years. The selection of addicts to be sterilized should be made from among those who are admitted to the department of public welfare. The problem of finding some means of reducing the number of persons with strong hereditary trends toward alcoholism is an urgent one.

New Trends in Demographic Science

Under the direction of the federal ministry for popular enlightenment, a vigorous publicity campaign on problems pertaining to hereditary biology has been planned. The purpose is to promote discussion of fundamental questions of demographic science: the declining birth rate, economic problems, the law on the prevention of offspring with bad hereditary tendencies, and questions concerning the preservation of the purity of the race in every way possible—through the press, the radio, and the like. It is planned to distribute millions of pamphlets dealing with the demographic policies of the new government. The ministry has appealed to all organizations, leagues and associations to work for the dissemination of these ideas. Detailed demands and proposals are made. The associations are urged to lower the dues of members who have large families. The directors of every association should see to it that every member of their organization becomes familiar with the official publicity material that has been distributed. The pamphlets distributed at a low cost by the local headquarters of the national-socialist party are calculated to bring in money with which to furnish practical aid to the heads of large families. All meetings of the associations and leagues during the next few months must be permeated with hereditobiologic ideas and plans.

The Cost of Health Insurance

As announced the cost of medical care of members of the associations of the federal health insurance system amounted in 1932 to a total of 258,536,000 marks (\$93,000,000, current exchange), as compared with 328,224,000 marks (\$118,000,000, current) in 1931. In other words, in 1932, 15.14 marks (\$5.45), on an average was expended for each member, and in 1931, 17.28 marks (\$6.22). Whereas the total expenditures for medical treatment have diminished by 21.2 per cent the cost per member as a result of the simultaneous decline in membership of 10.2 per cent due to the increased unemployment growing out of the economic crisis, shows only a decrease of 12.4 per cent. The expenditures per member in the metropolitan industrial regions amounted to 16.05 marks (\$5.78), in the prevailingly industrial regions, to 15.36 marks (\$5.53), in the predominantly agricultural regions to 14.24 marks (\$5.13), and in the purely agricultural regions, to 13.44 marks (\$4.84).

Combating Quackery in Danzig

The Free State Danzig has now a decree for the protection of public health. It provides that cancerous diseases, diseases of women and children transmissible and infectious diseases, and particularly venereal diseases and tuberculosis, may be treated only by licensed physicians. Irregular practitioners must present themselves to the district physician and prove their ability to recognize dangerous and infectious diseases. If they are unable to furnish satisfactory proof of such ability they will be required immediately to abandon their activities. Furthermore unlicensed practitioners are prohibited from performing any intervention associated with an injury of the tissues (injections, vaccination). They are likewise forbidden to use dangerous apparatus.

BELGIUM

(From Our Regular Correspondent)

Sept 28, 1933

Schools for Persons with Impaired Vision

A convention of the Association internationale de prophylaxie de la cécité was held in Paris, Nov. 19, 1932, under the chairmanship of Professor de Lapersonne. The entire session was devoted to a discussion of the school for persons with amblyopia. In Belgium nothing has been done in this field. Professor Weekers presented a comprehensive paper on the subject before the Société belge d'ophtalmologie. The first question considered was: What children attend a school for pupils with impaired vision? The regulations on this subject are of a tentative nature, since the institution of schools for the preservation of eyesight is of recent date. Nevertheless, certain rules are beginning to take shape. Notably Bartels regards as amblyopic all children whose vision is too good for them to be placed in institutions for the blind and too weak for the ordinary school, although sufficient to permit them to learn to read and write. The visual acuity ranges between 2/10 and 4/10, after correction. Myopic children affected with marked and progressive myopia may be admitted to these schools even though their visual acuity is in excess of the limit indicated. The same principle applies to disorders of the superficial or deep-lying ocular membranes with an evolutionary and progressive tendency.

THE NUMBER OF SCHOOLS NEEDED

Owing to the relatively small number of amblyopic children, the creation of a completely equipped school for amblyopic pupils is justified only in cities with at least 100,000 people. A certain number of amblyopic children of nearby rural districts will usually attend the city school. The others may be admitted to the best available school or may be given private instruction. Following the paper of Professor Weekers, the society adopted the following resolution: The Société belge d'ophtalmologie hereby expresses the desire that special schools for children with impaired vision be created in the field of primary education. These children are unable to attend ordinary schools, nor are they in their proper place in institutions for the blind. Their education and their whole life outlook suffer from the lack of such schools. The results secured in the schools for the preservation of eyesight, which have been functioning for several years in various countries (England, France, Germany, Switzerland and the United States), are excellent. It is the duty of our country to follow the general trend on pain of being left behind in matters of education.

Otorhinolaryngologic Congress

At the thirty-ninth congress of the Société belge d'oto-rhino-laryngologie, held at Ghent, under the chairmanship of Dr. Driesbeque, Van Caneghem reported on the pressure and the chemical and cytologic composition of the cerebrospinal fluid in thirty-four patients with extradural complications of ear infections. He found that in half the patients there is hypertension of the cerebrospinal fluid, and that in a third of the cases the hypertension is rather marked (more than 30 cm. of water). This hypertension is noted especially in patients who present an extradural abscess, so that if, in a patient affected with mastoiditis, a pressure above 30 is observed it is likely that he presents an extradural abscess. Normal tension does not exclude the possibility of a like abscess. Hypertension does not aggravate the postoperative prognosis nor can it be explained by a collateral edema or by toxic phenomena but only by changes in the circulatory system. In four patients, chemical and cytologic changes in the cerebrospinal fluid were found in the absence of any meningeal phenomenon. They may constitute a first stage in the evolution

of ordinary meningitis, they do not constitute the clinical syndrome of serous meningitis

Bronchoscopy in Acute Lung Abscesses

Soulas of Paris pointed out that acute pulmonary abscesses in the adult are greatly benefited by intrabronchial treatment. If the patient is treated from the third or fourth week, a few sittings may suffice to effect a radical cure (in forty-seven patients the author secured thirty-three cures, as confirmed by the test of time from eight months to four years. In some cases, after a definite improvement is brought about, a surgical operation may be necessary (third or fourth, or even the fifth month), and its prognosis is then favorable. The bronchoscopic method does not consist in "broncho aspiration" or broncho-injection, it involves a much more complex intrabronchial action, the basis of which is a cleansing process or removal of bronchial obstructions, combined with simple instillations.

Society News

The annual congress of the Association of French-Speaking Physiologists was held at Liege, June 7-10, under the chairmanship of Professor Dubois, dean of the Faculté de médecine de Lille. Three papers, by J. Demoor, H. Cardot and V. Henri, and many other communications were presented.

BUCHAREST

(From Our Regular Correspondent)

Oct 13 1933

The Distribution of Narcotics Becomes a State Monopoly

The new health law contains a paragraph which says that henceforth narcotics will be imported and distributed only by the state. A minimal quantity to be purchased is prescribed by the law. In consequence of this order, the prices of proprietary medicines containing narcotics rose sharply. The ministry of health, seeing the detrimental action of the law, in its latest order repealed that part of the law relating to centralization of the distribution of narcotics. The Bucharest office will restrict its activity only to the imposition of the import duties, which were raised considerably. Importers will pay 10 per cent of the face value of all consignments. In pharmaceutical circles it is thought that the ministry of health has given up the idea of centralization of distribution. At the same time they express their indignation over the 10 per cent duty which they find exorbitant.

In another order, the ministry of health introduced a new stamp tax levied on all kinds of cosmetics. The minister intends to extend the tax to all kinds of proprietary medicines to protect the interests of dispensing chemists who complained to the ministry of health. Ten years ago they dispensed ten medical prescriptions to one proprietary medicine; at present the rate is just the reverse, they sell ten packages of proprietary medicines to one prescription brought to them for dispensing.

Balkan Medical Week

The Balkan Medical Week is held once a year in one of the Balkan states, namely, Yugoslavia, Rumania, Bulgaria, Turkey or Greece. This year it was held in Belgrade, September 11-13. The first congress was held in 1930 at Athens, the second in 1931 at Constantinople, the third in 1932 at Bucharest. At the Belgrade medical week, the Rumanian delegation was led by the official representative of the ministry of health, Dr. Deculescu, state secretary. The program consisted of discussions of the following themes: the role of physicians in the union of the Balkan people, hygienic problems of school children, health in the villages, housing conditions in the rural parts of the Balkan states, inter-Balkan public health collaboration, public health conventions between the Balkan coun-

tries, antituberculosis work, pediatrics, the malaria problem in the Balkan states.

The week was opened in the presence of medical delegates of Yugoslavia, Rumania, Bulgaria, Greece and Turkey, in the spacious and beautifully decorated hall of the Yugoslavian Medical Association. Professor Marcovici, president of the Yugoslavian committee, presided. Speeches were made by Deculescu, state secretary, Professor Topa, vice president of the Rumanian delegation, and Akil-Muktar Bey, dean of the medical faculty of Constantinople University.

The Belgrade physicians received their colleagues with the greatest cordiality. They arranged excursions, which offered interesting views; they demonstrated what a strong will, hand in hand with the monetary support of the Rockefeller Foundation can do and what improvement can be achieved within a single decade in the public health conditions of a country. The guests were given transportation at the frontier of Yugoslavia in Pullman cars, and delegates did not pay during the whole week for trains or for boat fares; they were regarded as the guests of the Yugoslav state.

Pellagra and Malaria in Jassy County

A few years ago there was a general boom among the farmers, and their living conditions were favorable. Pellagra was then almost extinct in Rumania, where a great part of the rural population is consuming maize bread, the flour used being blended with wheat flour. The economic crisis in recent years has forced agricultural laborers to make their bread from pure maize flour with the consequence that pellagra is common in the county of Jassy, the poorest district in Rumania. The ravages of pellagra were augmented by the meteorological conditions this year. The summer was exceedingly wet; rain poured in torrents almost continuously in June and July, so that maize could not ripen in due time. As the peasants needed it for food they cut it down when only half matured, and instead of bread they consumed maize. The magistrates enlightened the rural population about the dangerous consequences and in some places they sent out inspectors to prevent the cutting of raw and damp maize.

During the excessively rainy summer, many small streams and rivers inundated the adjacent areas. In Jassy County the river Moldava inundated almost all the meadows of the county, which thus became a nest of mosquitoes and malaria. According to the report of the county medical officer, there are more than 10,300 malaria patients in the county. In September, 3,306 fresh cases, with three deaths, were reported. The largest number of cases were in the villages of Stolniceni, between the Pruth and Jijia rivers where the malaria-free inhabitants could be counted on one's fingers, but in villages built on the slopes, where water could flow down freely, no malaria appeared. The health authorities distributed free quinine, mainly as pills containing 0.05 and 0.10 Gm.

The Protection of Mothers and Children

The text of a new plan for the protection of mothers and children has been sent by the ministry of public welfare to institutes and professional organizations. The intention of the minister being that in the final drafting of the law all those concerned should be satisfied. According to the plan as laid down in the draft, pregnant women, mothers in childbed, and children up to their eighteenth year are entitled to medical and social assistance. The new law will require that in the future couples to be married must undergo a medical examination and be granted a certificate by a city medical officer to be produced before the registrar. The new law contains three drastic paragraphs for controlling abortions.

The draft states that working women in the last two months of pregnancy shall be entitled to a holiday with a certain

fraction of their regular wages Children up to their eighteenth year will be subject to health control, exercised by the parish or by the town physician in the homes of children and in schools, workshops studios, factories or other such enterprises where persons under age are working The ministry of public welfare deems necessary the erection of medicosocial dispensaries and clinics for mothers and children, maintained partly by the state and partly by the municipalities

The Destitute Children in Russia

Dr Leo Constantinescu, who has returned from Russia after a sojourn of sixteen years, having been taken prisoner in 1917, gave a popular lecture on the destitute children of Russia He said that during the rule of the czars there were many children whose parents fell in the war or who became separated from their parents during the flight before invading soldiers The wretched years succeeding the World War are responsible for the almost countless number of destitute children who wander about in the vast area of the soviet domain Hundreds of thousands of starving children, the so-called Besprisonny, are tramping all over the country begging, starving, stealing and indulging in cocaine and sex vices They roam in large groups from town to town, with a predilection for the railroad tracks, and sometimes their begging assumes a rather threatening character They have no abode but spend the night under bridges or in tunnels and sheds and naturally become ruined physically and morally The Russian magistrates realize this danger but have failed as yet to relieve the situation

CAPE TOWN

(From Our Regular Correspondent)

Oct 10, 1933

Annual Meeting of Medical Association

The Annual Scientific Meeting of the Medical Association of South Africa, popularly known as the Medical Congress, was opened by Vice Admiral Evans, commander of the African station, September 25, and lasted for six days The president of the congress this year is Dr E B Fuller, a specialist in urology and one of the founders of our first medical faculty at the local university The congress was held in the university buildings, the gardens of which are a blaze of color, owing to the massing of veld shrubs and annuals It was attended by about a fifth of all practicing physicians, an unusually high attendance The program was well arranged but, as usual on such occasions rather overloaded so that there was little time to discuss adequately the various papers One of the most interesting discussions was at the combined session of the medicine and public health sections, which had invited the veterinarians to attend to debate the question of bovine tuberculosis The discussion was opened by Dr Gilles de Kock of Onderstepoort, the fine experimental and research veterinary laboratory near Pretoria established many years ago by Sir Arnold Theiler Dr de Kock emphasized the close connection between human and animal diseases and pleaded for the more general recognition at medical congresses of comparative medicine a plea originally made by Sir Clifford Allbutt that has heretofore fallen on unsympathetic ears The discussion stressed the importance of bovine tuberculosis as a factor in the general incidence of tuberculosis a disease that is rapidly spreading in this country The meeting passed a resolution calling on the government to initiate an investigation into the incidence of bovine tuberculosis Reference was made to the present unfortunate method whereby natives contracting tuberculosis in the towns were permitted to return to their kraals, where they were not under supervision and were likely to spread the disease

Another interesting session was devoted to the discussion of medicolegal subjects in general practice This was opened by

Dr C J Albertyn of Pietermaritzburg, who insisted on the urgent necessity to educate district surgeons and general practitioners in country areas in modern forensic medicine The government has lately consented to join forces with the University of the Witwatersrand and to appoint three whole time district surgeons, who would at the same time act as lecturers in forensic medicine at the university This is a step in the right direction, for so far there has been no recognized medicolegal expert in the country, and the judges have more than once commented on the unsatisfactory manner in which medicolegal evidence has sometimes been submitted to the courts A resolution was passed calling on the government to provide similar facilities to those granted to the Witwatersrand and the University of Cape Town, which is the older medical faculty

The Medical Council

The charter of the profession is the medical, dental and pharmacy act of 1928, which stipulates that there shall be a medical council, of which ten members shall be elected by the profession by ballot The term of office of the council expires this year, and the retiring president, Dr Davies, has just issued a report of what the council has done during its term of existence It has drawn up a code of rules, settled several disciplinary cases, and advised the government on matters in which the profession is intimately concerned The government nominees on the new council have already been appointed They include Dr Davies, who was an elected representative in the last council, and Dr Stals The nominations for the elected representatives are not yet known but it may be taken for granted that they will consist of members of the medical association and, for the most part, specialists It is generally considered that it would be a good thing if the council had a fair sprinkling of general practitioners among its members The chief difficulty in securing this is the enforced absence from private practice inseparable from attendance at council meetings Nevertheless, efforts are being made to induce general practitioners to stand for nomination At the last election the association ran a "ticket" and was successful in getting most of its nominees appointed, but that method was criticized and this year it has been decided that each province is to nominate six candidates and that the whole twenty-four so nominated shall be balloted for The act stipulates that not more than four members of the council shall be resident in one province, so that this list of twenty-four candidates ensures a free and fairly wide choice

The Association's Gold Medal

The medical association awards a gold medal for 'meritorious services rendered to the profession' The first medal was awarded two years ago to the veteran Dr Darley Hartley, emeritus editor of the association journal The second medal has been awarded to Dr J A Orenstein director of sanitation of the Rand mines, who for six years held office as president of the association and was largely responsible for the amalgamation of the two medical associations in this country into the present strong association Dr Orenstein is lecturer on tropical medicine to the University of the Witwatersrand which bestowed the honorary degree of LL.D on him two years ago He assisted Colonel Gorgas in Panama and was a co author with Dr Prince of the history of the medical administration of the Canal Zone

Report of Carnegie Commission on Poor Whites

The Carnegie commission on the poor white problem has finished three years work and has published a voluminous report, really a series of reports The medical and hygienic aspect of the problem has been studied by Dr Murray one of the assistant health officers of the department of public health

of the union. He finds that there is no evidence to show that climate, humidity or excessive sunlight leads to physical deterioration and, contrary to most other observers, he is not convinced that malaria plays any important part in the production of poor whites. His data on the latter point, however, are far from conclusive and tend to show merely that in the small groups that he studied the physical effects of malaria could be regarded as negligible. He is of opinion that malnutrition, largely due to insufficient and badly prepared food, is a considerable factor in retardation. The other reports deal with the economic and educational aspects of the problem. The most interesting of them is that which relates the results of the study of intelligence among poor white children and their response to various mental tests, some of which have been specially standardized for children born in South Africa.

Marriages

EDWARD M. DE YOUNG, Nashville, Tenn., to Miss Alma Idell Jackson of Douglas, Ga., at Grand Rapids, Mich., August 28.

JAMES HENRY BOLES, Charleston, W. Va., to Miss Catherine Grace Rupert of Rochester, N. Y., October 18.

GEORGE W. BARTELS, Janesville, Wis., to Miss Winifred Virginia Kyler of Cedar Falls, Iowa, September 16.

FORREST L. CARPENTER, Latta, S. C., to Mrs. Margaret Gailhard Bethea at Monroe, N. C., September 20.

LAWRENCE IGNATIUS CLARK, Toledo, Ohio, to Miss Mae Reardon of North Scituate, Mass., September 27.

GIFAN JACKSON BRIDGES, Atlanta, Ga., to Miss Margaret Eugenia Raymond of Augusta, September 21.

ROBERT H. BELL, Carlinville, Ill., to Miss Lydia Reichmann of St. Louis at Indianapolis, September 5.

WILLIAM C. BERNSTEIN, New Richmond, Minn., to Miss Mildred Goldberg of Minneapolis, recently.

ROBERT CLARKE, JR., Grant City, N. Y., to Mrs. Elizabeth F. Gallagher of New Brighton, October 15.

PAUL LAWRENCE DENT, Quinwood, W. Va., to Miss Willada Hall Rickman of Roseland, Va., recently.

WILLIAM JAMES CUSICK, Elmira, N. Y., to Miss Doris Romana Conboy of Geneva, October 18.

CHARLES HALL ASHFORD to Miss Caroline Winder Dunn, both of New Bern, N. C., October 28.

CHARLES MEADOWS CLARK to Miss Evelyn Howard, both of McMinnville, Tenn., October 27.

ALLEN STEINWEHR AVERY to Miss Margaret Crawford, both of Toledo, Ohio, October 27.

SAMUEL CLARK FAIR to Miss Virginia Manson Hunt, both of Memphis, Tenn., September 22.

GILRUTH DARPINGTON, Yazoo City, Miss., to Miss Anne Du Buisson Hogue, October 6.

GEORGE LAMAR ARRINGTON to Miss Mary Wilbourn, both of Meridian, Miss., October 7.

HUBERT H. BLANCHARD, Milwaukee, to Miss Sara M. Cox at Waycross, Ga., October 11.

WILLIAM WARD BAILEY, Porterdale, Ga., to Miss Stella Cater of Macon, November 4.

ABBOTT WILLIAM ALLEN to Miss Helen E. Coughlan, both of New York, September 9.

AUBREY C. BENJAMIN to Mrs. Frances A. Eddy, both of Chelsea, Mass., in October.

HARLEY C. CRANE to Miss Marian Jean Martin, both of Flint, Mich., September 2.

ZENAS HORACE ELLIS, New York, to Mrs. Mignonette Hills at Reno, Nev., August 7.

HENRY ROOSEVELT CRAIG to Miss Anne Rosamond Oliver, both of Detroit, July 8.

JOHN C. DRAKE to Miss Ruth O. Firestone, both of Indianapolis, September 15.

WILLIAM G. BANDY to Miss Eunice Jones, both of Lincoln, N. C., in August.

Deaths

BURTON JAMES LEE ☉ New York, Columbia University College of Physicians and Surgeons, New York, 1898, professor of clinical surgery, Cornell University Medical College, member of the American Surgical Association, the Society of Clinical Surgery and the Radiological Society of North America, member and past president of the American Radium Society, formerly secretary of the American Society for the Control of Cancer, fellow and at one time member of the board of governors of the American College of Surgeons, clinical director and attending surgeon to the Memorial Hospital, associate attending surgeon to the New York Hospital, consulting surgeon to the Sharon (Conn.) Hospital and the Elizabeth A. Horton Memorial Hospital, Middletown, N. Y., served during the World War, was decorated with the American distinguished service medal and the French *croix de guerre*, author of several monographs on cancer and tumor of the breast, contributor of articles to *Keen's Surgery* and the *Oxford Loose-Leaf Surgery*, aged 59, died, November 12, of coronary thrombosis.

HUGH WARREN BRENT, Phoenix, Md., University of Maryland School of Medicine, Baltimore, 1903, member of the Medical and Surgical Faculty of Maryland, fellow of the American College of Surgeons, professor of clinical gynecology at his alma mater, served during the World War, formerly visiting gynecologist to St. Joseph's and University hospitals and Hospital for Women of Maryland, Baltimore, on the staff of the Union Memorial Hospital, Baltimore, consulting surgeon to the Annapolis (Md.) Emergency Hospital and the Edward W. McCready Memorial Hospital, Crisfield, aged 52, died, August 19, of a self-inflicted bullet wound.

WILLIAM FULLER, Chicago, Rush Medical College, Chicago, 1887, member of the Illinois State Medical Association, formerly professor of operative surgery and associate professor of clinical surgery at the University of Illinois College of Medicine, fellow of the American College of Surgeons, served during the World War, on the staffs of the Washington Park, Woodlawn and Englewood hospitals, aged 69, died, October 25, of uremia and carcinoma of the prostate.

GEORGE PULLEN PEED ☉ Colonel, M. C., U. S. Army, Fort Slocum, N. Y., University of Virginia Department of Medicine, Charlottesville, 1895, veteran of the Spanish-American and World wars, entered the regular army as an assistant surgeon in July, 1903, and in December, 1903, was made a captain in the medical corps, was promoted through the various grades to that of colonel in 1929, fellow of the American College of Surgeons, aged 58, died, October 20, of heart disease.

GEORGE JOSEPH ECKEL ☉ Buffalo, University of Buffalo School of Medicine, 1907, associate professor of medicine at his alma mater, fellow of the American College of Physicians, past president and secretary of the Buffalo Academy of Medicine, served during the World War, on the staffs of the Emergency Hospital of the Sisters of Charity, Buffalo City Hospital, Buffalo General Hospital and the Mercy Hospital, aged 55, died, October 29, of hypertensive heart disease.

LEWIS AUGUSTUS COFFIN, New York, University of the City of New York Medical Department, 1886, an Affiliate Fellow of the American Medical Association, member of the American Laryngological Association and the American Laryngological, Rhinological and Otolological Society, fellow of the American College of Surgeons, formerly on the staff of the Manhattan Eye, Ear and Throat Hospital, aged 77, died, October 30.

WILLIAM M. LESTER, State Park, S. C., University of Maryland School of Medicine, Baltimore, 1887, member of the South Carolina Medical Association, formerly member of the state board of health, on the staff of the South Carolina Sanatorium, aged 69, died, October 16, in the Memorial Hospital, New York, of esophageal diverticulum and epidermoid carcinoma of the base of the tongue.

WILLIAM THOMAS JOYNER ☉ Roswell, N. M., University of Arkansas School of Medicine, Little Rock, 1889, past president of the New Mexico Medical Society and the Chaves County Medical Society, past president and secretary of the New Mexico Board of Medical Examiners, on the staff of St. Mary's Hospital, aged 66, died, October 12, of pneumonia.

CHARLES EDWARD WAITS ☉ Atlanta, Ga., Atlanta Medical College, 1915, assistant professor of clinical surgery at his alma mater, past president of the Fulton County Medical Society, fellow of the American College of Surgeons, served

during the World War, visiting surgeon to the Grady Hospital and the University Hospital, aged 44 died, October 21

Lyman Asa Jones, Walpole, Mass., Harvard University Medical School, Boston, 1891, member of the Massachusetts Medical Society, at one time state inspector of health in the Berkshire District, formerly superintendent of the Pondville Hospital, Wrentham, aged 67, died, October 26, in the Norwood (Mass.) Hospital, of heart disease and hypertension

Wallace Leslie Britt ♂ Jackson, Miss., Atlanta College of Physicians and Surgeons, 1902, fellow of the American College of Surgeons served during the World War, on the staffs of the Mississippi State Charity Hospital and the Jackson Infirmary, aged 61, died, October 19, of injuries received in an automobile accident

Alvin Josiah Kern ♂ Slatington, Pa., Cleveland College of Physicians and Surgeons Medical Department of Ohio Wesleyan University, 1887, University of Pennsylvania School of Medicine, Philadelphia, 1888, formerly member of the state legislature for nine years member of the school board, aged 68, died October 14, of heart disease

Maurice George Albert Milan, Aberdeen, S. D., Georgetown University School of Medicine, Washington, D. C., 1913, member of the South Dakota State Medical Association, formerly on the staff of the Aberdeen Good Samaritan Hospital, aged 46, died, September 13, of influenza and pneumonia

Dale L. Martin, Tacoma, Wash., Northwestern University Medical School, Chicago 1909, member of the Washington State Medical Association, served during the World War, on the staff of the Tacoma General Hospital, aged 47, died October 14, in a hospital at Rochester, Minn.

Joel Crawford, Yale, Va., University of Pennsylvania School of Medicine, Philadelphia, 1883, member of the Medical Society of Virginia, past president of the Post Graduate Medical Society of Southern Virginia, aged 72, died, October 14, in the Petersburg (Va.) Hospital

Nelson Caryl Davis, Bahia, Brazil, S. A., University of California Medical School, San Francisco, 1921, member of the American Association of Pathologists and Bacteriologists, director of the Rockefeller Research Laboratories, aged 41, died, October 20

James M. Billings, Lebanon, Mo., Miami Medical College, Cincinnati, 1873, member of the Missouri State Medical Association, president and formerly secretary of the Laclede County Medical Society, county health officer, aged 89, died, August 28

Fred Rolland Dolson, Nowata, Okla., Tulane University of Louisiana Medical Department, New Orleans, 1898, member of the Oklahoma State Medical Association, veteran of the Spanish American and World wars, aged 59, was found dead, October 10

Norman Willis Johnson, Quasqueton Iowa, Keokuk (Iowa) Medical College, 1904, member of the Iowa State Medical Society, president of the Buchanan County Medical Society, served during the World War, aged 60, died, October 15

Sarah Lee Goodwin, Chicago, Hahnemann Medical College and Hospital, Chicago, 1893, aged 77, died, October 21, in the Ravenswood Hospital, of cardiac decompensation, following a fracture of the femur as the result of a fall

William Joseph McCrann, Papillion, Neb., Louisville (Ky.) Medical College, 1883, member of the Nebraska State Medical Association formerly on the staff of St. Catherine's Hospital, aged 78, died, October 13 of pneumonia.

Cav Andrea De Lucis, San Francisco, Royal University of Turin Faculty of Medicine and Surgery, Italy, 1881, member of the California Medical Association aged 82, died, August 2, of aortic stenosis and coronary sclerosis

John Cunningham Maxwell, Sterling, Ill., College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1901 aged 67, died suddenly, October 14 in Houston, Texas, of cerebral hemorrhage.

John William Sharpe, Toledo, Ohio, Faculty of Medicine of Trinity College Toronto, Ont., Canada 1878 University of Toronto Faculty of Medicine 1879, aged 73 died October 25, of myocarditis coronary sclerosis and influenza

Matthias Ambrose Wagner ♂ Toledo, Ohio, St. Louis University School of Medicine 1912, served during the World War aged 44 on the staff of St. Vincent's Hospital, where he died October 30 of duodenal ulcer

William Alexander Sloane Geddes ♂ Birmingham Ala., University of Toronto Faculty of Medicine, Toronto Ont.,

Canada, 1918, aged 44, died, October 23, in a hospital at Denver, of intracranial hemorrhage

John E. Baugh, Elkton Tenn., University of Louisville (Ky.) School of Medicine, 1880, bank president, chairman of the county board of education for twenty-five years, aged 74, died, October 29

Herbert Henry Williams, Mohawk, N. Y., Baltimore Medical College, 1911, member of the Medical Society of the State of New York, served during the World War, aged 50, died, October 15

John Wesley Clemmer, Columbus, Ohio, Pulte Medical College, Cincinnati, 1876, formerly member of the city board of health aged 84, died, October 21, of cerebral embolus and cardiac disease

Oscar Porter Harris ♂ Mendota, Ill., Rush Medical College, Chicago, 1902, physician and owner of a hospital bearing his name, aged 62, died suddenly, October 29, of cerebral hemorrhage

Edwin Isaac Becker, Philadelphia, Jefferson Medical College of Philadelphia, 1897, on the staffs of the Jewish and Germantown hospitals, aged 55, died, October 29, of coronary thrombosis

John Daniel Doyle, Brooklyn, Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898 on the staff of the Shore Road Hospital, aged 60, died, November 2, of pneumonia.

Chester Grant Savage, Westerly, R. I., Baltimore University School of Medicine, 1898, member of the Rhode Island Medical Society, aged 64, died, October 12, of heart disease

Samuel Alpert, Chicago, University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1933, aged 26, intern at St. Joseph's Hospital, where he died, November 2, of brain tumor

Ira Tyson Clemons, Comanche, Texas, Tulane University of Louisiana Medical Department, 1897, aged 63, died October 22, of injuries received when struck by an automobile

Samuel John Hartmere ♂ Boston, Tufts College Medical School, 1929 formerly on the staff of the Boston City Hospital, aged 38, died, November 1, of heart disease

William Shakespeare Taylor, Johnson City, Tenn., Vanderbilt University School of Medicine Nashville, 1896, aged 61, died, October 16, in a hospital at Knoxville

Herman Richard Gundermann ♂ Monango, N. D., St. Louis College of Physicians and Surgeons, 1887, aged 70, died, August 4, in Edgeley, of embolism

John Harvey Gardner, New York, University of the City of New York Medical Department, 1879, aged 77, died, October 27, in Islip N. Y. of arteriosclerosis

George Clarke Webb, Federalsburg Md., Maryland Medical College, Baltimore, 1912, aged 50, died, October 19, of arteriosclerosis and cerebral hemorrhage

Julian E. Camp ♂ Augusta, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1880, aged 75, died, October 30, in Monmouth, of myocarditis

Charles L. Allen, Muncy Pa., Jefferson Medical College of Philadelphia, 1880, aged 75, died, September 19, of arteriosclerosis and angina pectoris

Charles A. Doolittle, Atchison Kan., Kansas City College of Medicine and Surgery, 1916, aged 65, died, October 22, of cerebral hemorrhage

Dareall Grant Black ♂ Wilkesburg Pa., Western Pennsylvania Medical College, Pittsburgh, 1899, aged 69, died, October 14, in Pittsburgh.

John Joseph Gaynor, San Francisco, College of Physicians and Surgeons Buffalo, 1881, aged 79, died, October 5, of cerebral hemorrhage

Aaron Levine ♂ Cincinnati, Emory University School of Medicine, Atlanta 1926, aged 39, was found dead, November 1, of cerebral hemorrhage

James William Reid, Windsor, N. S. Canada, Halifax (N. S.) Medical College, 1884, aged 74, died October 29, of heart disease.

Samuel E. Gibbs, New York, Denver College of Medicine 1883 aged 90, died, September 25, of endarteritis and hypertension

Robert A. Moore, Silver City, Iowa, College of Physicians and Surgeons, Keokuk 1881, aged 79, died, October 9 of senility

William H. Langston ♂ Orlando Fla., Missouri Medical College, St. Louis, 1893 aged 63, died, October 17, of coronary embolus

Correspondence

THE FOURTH VENEREAL DISEASE

To the Editor—In the interests of uniform medical nomenclature and to avoid confusion in medical literature, I wish to call attention to the misapplication of the expression "the fourth venereal disease" as used by Cole in his otherwise excellent special article in *THE JOURNAL*, September 30. In this article the expression is used synonymously with "lymphogranuloma inguinale" in the title, while in the text the expression is used but once, when he says, "It has also been given such names as 'the fourth venereal disease,' 'tropical bubo,' " No reference is given as to when it was first spoken of as "the fourth venereal disease," but judging by the context I would assume that it was not many years ago. Neither was mention made of the disease "erosive and gangrenous balanitis," to which Corbus and Harris (*THE JOURNAL*, May 8, 1909, p 1474) gave the status of a fourth venereal disease, although previously Bataille and Berda (*Compt rend Soc de biol* 41 689, 1889; *Med mod* 2 340, 1891, cited by Young Practice of Urology 2 195, 1926) asserted that it always followed venereal exposure.

Lack of mention of the last named disease is probably due to its having escaped Dr Cole's attention and perhaps explains the misuse of the name in connection with "lymphogranuloma inguinale," a disease to which exudative and gangrenous balanitis has no apparent relation. This is no criticism of Dr Cole, as many urologists are unacquainted with the latter condition and in several textbooks on urology it is not even mentioned. Cabot's "Modern Urology," Volume 1, contains an excellent description of this disease by Corbus. Briefly it is an acute specific ulcerative and at times gangrenous balanoposthitis, apparently due to a spirillum and fusiform bacillus living in symbiosis, and further characterized by moderate inguinal lymphadenopathy and constitutional symptoms such as accompany almost any fever.

W M DONOVAN, M D, Scranton, Pa

[The letter was referred to Dr H N Cole, who replies.]

To the Editor—In reply to the note of Dr Donovan, I would say that I appreciate his calling my attention to the fact that erosive and gangrenous balanitis has been spoken of as the fourth venereal disease, in fact, I have already used this term, I am afraid, with my students in the past. It seems to me, however, that erosive and gangrenous balanitis will never assume the prominent position that lymphogranuloma inguinale has already taken.

In the first place, the average case of erosive and gangrenous balanitis is comparatively benign, if a correct diagnosis is made and if the proper type of measures is used, including the use of oxidizing agents, for example, potassium permanganate or hydrogen peroxide and, exposing the infected area to the open air.

Moreover, erosive and gangrenous balanitis is a far rarer disease than is lymphogranuloma inguinale, and finally the prognosis of an erosive and gangrenous balanitis is far better than what one may get in the average run of lymphogranuloma inguinale. It is rare indeed that one sees severe results from erosive and gangrenous balanitis. I can remember only two cases of mine in which a portion of the penis was destroyed, while with lymphogranuloma inguinale it is my opinion that any case is a potential matter of great importance, and even with the best of care the physician is taking care of a condition in lymphogranuloma inguinale that may lead to very serious end-results, because of the fact that no specific for the disease is available.

On that account I have used the term "fourth venereal disease" for lymphogranuloma inguinale, believing that it has far greater importance than does erosive and gangrenous balanitis, though it is true that the latter disease has in the past been termed "fourth venereal disease." I do not think, however, that this term was used any earlier for erosive and gangrenous balanitis than it has been for lymphogranuloma inguinale.

H N COLE, M D, Cleveland.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

TREATMENT OF EXCESSIVE GROWTH AND OBESITY

To the Editor—I would appreciate your opinion and advice regarding the diagnosis and treatment of a case of obesity which strikes me as being mainly a glandular imbalance although there is probably some hereditary factor involved. A girl aged 8 years weighs 104½ pounds (47.5 kg) and is 55½ inches (140 cm) tall. The hair of the scalp is abundant and of normal texture. The vision is 20/20 in each eye. The nose and ears are normal. The teeth are normal except that they erupted a little early for the patient's age. The throat is normal. The thyroid is not palpable. The chest heart and lungs are normal. The abdomen is normal except for three horizontal folds of fat extending across the abdomen the first at the upper part of the abdomen, another at about the middle and the third across the lower part. Her appetite is normal she eats little bread or potatoes. The gastro-intestinal tract is normal. The genito-urinary tract is normal except for well developed rather prominent mammary glands. The reflexes are normal. The mental development is normal for the patient's age, or perhaps a little above the average. The patient has the following measurements: head circumference 20½ inches (51 cm), neck 12½ inches (31.5 cm), chest 30½ inches (77 cm) just above the nipple line, abdomen at the umbilicus 30½ inches (77 cm), arm circumference 10 inches (25.4 cm), midway between the shoulder and the elbow wrist circumference, 6½ inches (16.5 cm). The fingers are short fat and moderately tapering. The knee circumference is 13½ inches (34 cm), the ankle circumference 8½ inches (21.5 cm). The length of the feet from heel to toe is 8½ inches (22 cm). The distance from knee to heel is 15½ inches (39 cm). The circumference of the hips is 32½ inches (82.5 cm). The mother is living at the age of 46. She weighs 213 pounds (96.6 kg) and is 68 inches (173 cm) tall. The father is living at the age of 50. He weighs 185 pounds (84 kg) and is 73 inches (185 cm) tall. There are three sisters aged 4, 15 and 17 years two are of average weight and one is slightly under the average. There are two brothers aged 11 and 13 years one is of average weight and the other is about 10 pounds (4.5 kg) underweight. Please omit name.

M D West Virginia.

ANSWER—From the description, this patient may be showing the effects of hyperactivity of the pituitary gland in regard to the growth hormone. The child is tall for her age and is greatly overweight even in relation to her height. Whatever the cause, however, the actual obesity is due to hyperalimination and can be reduced by dieting.

The calory requirement of the patient based on her ideal weight (73 pounds, or 33 Kg), is about 2,640 calories. A diet of 1,500 calories is sufficient for her basal requirement and growth and should cause her to draw on her fat stores for the energy expended in activity.

The following diet is suggested

Protein	100 grams =	400 calories
Fat	50 grams =	450 calories
Carbohydrate	160 grams =	640 calories

1,490 calories

Since the patient will draw largely on her fat stores for the calories not supplied in the diet, the fat content of the diet is about as low as is compatible with palatability. For this reason the carbohydrate content must be kept relatively high, in order to avoid acidosis. The protein content is high in order to insure proper tissue repair and because of its specific dynamic action.

In all such restricted diets special attention should be paid to the roughage, mineral and vitamin content. Because of the low fat content of the diet, it is wise to give the fat-soluble vitamins in concentrated form.

Any increase in muscular activity which the child can be induced to make especially in the form of play will of course aid in the treatment.

MICRO ANALYSIS OF BLOOD BY GRAVIMETRIC METHOD

To the Editor—I am interested in the micro analysis of blood by the gravimetric method. I have Bang's original work on this subject (1913) but nothing later. By now I should think a complete technic should be developed for this work. Has the Association any standard approved or official method for such determinations? If so how could I obtain such directions? If not could you give me any leads through which I could obtain the information I need?

RICHARD J. DEGRAI, Bethlehem, Pa.

ANSWER—The later development of Bang's micromethods for blood chemistry by the gravimetric method may be found in the textbook of Bang and Blix, *Mikromethoden zur Blutuntersuchung*, Munich, Bergmann, 1927. The technic, in brief, is as follows:

The material under investigation is weighed instead of measured with a capillary pipet. The usual titration is used for further steps. In order to weigh such small quantities of fluid for analysis (from 0.1 to 0.15 cc.) Bang uses the torsion scale of Hartman and Braun (Frankfort-on-Main) which records the weight of the small quantity of fluid in a few seconds on a dial. A few drops of the fluid under investigation is placed on special filter paper weighing about 50 mg. (The proper quality of paper, already weighed, may be obtained from Emil Jensen A. G. Copenhagen, Warmbrunn and Qulitz, Berlin, or Hartman and Braun, Frankfort-on-Main.) The paper with the specimen is suspended as soon as possible on the torsion scale and the weight read immediately on a dial. The difference in weight between the empty sheet and that with the fluid gives the weight of the specimen used. If whole blood is studied, it is placed directly on the filter paper from the puncture wound in the finger. After weighing the sheet of filter paper is allowed to dry until the moist shine disappears and the material is then placed in a dry glass receptacle. The paper must be dry enough so that none of the specimen sticks to the glass. Similar sheets are prepared for control weighings. After weighing, the next step of the analysis is carried out. Bang's method has been used for blood sugar and chloride determinations and for the Kjeldahl determination of nitrogen. The technic has certain disadvantages for use in this country. The torsion balance is costly and must be carefully checked from time to time. Modifications of the method have been introduced in which instead of the weighing, the fluid is quantitatively determined by microvolumetric apparatus and delivered to the filter paper. The filter paper must be of the proper quality and certified before its use. As a result of these difficulties, no American textbook on quantitative clinical chemistry methods includes Bang's technic. The recent revision of Sahli's *Lehrbuch der klinischen Untersuchungsmethoden* 1931 volume II second half gives the technic for micro-Kjeldahl sugar and chloride determinations in detail on pages 590, 597 and 617.

PHARMACOLOGY OF POTASSIUM CHLORIDE

To the Editor—The Council on Pharmacy and Chemistry in reporting on Hoal (THE JOURNAL, July 22, p. 280) states that the referee's associate added that a colleague has used potassium chloride in long standing cases of nephritic edema without harmful effects over long periods. Potassium chloride is omitted from the materia medica books at my disposal. Will you kindly discuss the pharmacology of potassium chloride with special reference to its use in nephritis? What authorities sanction its use? Please omit name.

M.D. New York

ANSWER—It has long been known that the heart is poisoned by an excess of potassium salts in the circulation though a small amount is necessary for its action. It has also long been known that relatively large doses of these salts may be administered orally, or even by slow intravenous injection in normal animals or man without injury and it has been assumed by some that elimination by the kidneys explains the tolerance of such large doses. The corollary of that assumption is that the potassium salts are more toxic in the presence of nephritis than when the kidneys are normal. This is true as a general statement but not under all circumstances.

The blood is capable of eliminating many substances with great rapidity by various means and the kidneys in a given case may play a minor part in this elimination. Dr. Gold has recently observed (unpublished report of experiments) that no less than five times as much potassium chloride could be injected intravenously in a normal animal in five minutes without causing death as could be injected orally within half a minute.

It is obvious that the role of the kidneys is a minor one in the elimination of potassium salts from the circulation in such a short time and Dr. Gold observed no perceptible difference in the intravenous dose of potassium chloride in the normal and in the nephrectomized animal with rapid injection the inference being that the potassium salts passed from the blood serum into the tissues including the corpuscles.

The case is entirely different when large and frequently repeated doses are given orally over considerable periods, because there is a limit to the amount of the salts that may diffuse into the tissues and prevent the concentration in the blood serum that is injurious to the heart, in short, one should never administer the potassium salts in such a way that the concentration in the blood serum is greatly increased above the normal, and, on the other hand, if this increase is prevented, considerable amounts often may be given without harm.

Many seemingly contradictory statements in the literature may be harmonized if one bears in mind that many factors influence the actual toxicity of potassium salts for the heart, and that the concentration in the blood serum is also determined by a variety of conditions including the rate of absorption and the rate of elimination, each of which, in turn, is influenced by many conditions.

The use of potassium salts in the treatment of certain cardiac arrhythmias has been discussed by Samson and Anderson (THE JOURNAL, Dec. 31, 1932, p. 2257) and Smilie (Arch. Int. Med. 16:330 [Aug.] 1915) observed acute poisoning resulting from 10 Gm. of potassium chloride in one patient who had chronic nephritis. These authors give numerous references to the literature which should be consulted by one who wishes to use one of the potassium salts therapeutically.

SATO TECHNIC FOR PEROXIDASE REACTION OF BLOOD CELLS

To the Editor—Would you kindly give me the technic of making peroxidase blood smears by the method of Sato. This is referred to in THE JOURNAL, July 12, page 251 but the technic is not included. Please omit name.

M.D. Ohio

ANSWER—The Sato technic for the peroxidase reaction of the blood cells is a valuable improvement over the earlier methods. The technic and a critical analysis of the procedure are presented by Mascher in the *Zeitschrift für klinische Medizin* for May, 1933.

The following solutions are needed: (1) copper sulphate solution, 0.5 per cent; (2) 0.2 Gm. of benzidin dissolved in 200 cc. of distilled water at room temperature with the addition of 4 drops of 3 per cent hydrogen dioxide after filtering; (3) 1 per cent aqueous safranin solution as a nuclear stain.

The dioxide solution should be fresh. The benzidin solution should be a saturated solution. To test the solution, equal parts of solutions 1 and 2 are mixed in a test tube. A deep blue should appear immediately. Solution 2 should be kept in a dark cool place. It keeps for about six months.

The staining technic is as follows. The freshly prepared blood smears are allowed to dry in the air. Methyl alcohol should be avoided in cleaning the slides or cover slips. Solution 1 is first added for two minutes, poured off without washing and then solution 2 added for one and one-half minutes. The smears are carefully washed with a slow stream of water, and stained with solution 3 for two minutes. They are then washed and dried in the air. The technic is simple and the preparations keep indefinitely.

The peroxidase granules of the granulocytes (of bone marrow origin) assume a deep blue-green. The nuclei of the cells and the lymphocytes are red. The red cells do not stain.

This stain is highly sensitive owing to the presence of the copper sulphate. Not only the myeloid cells but also the monocytes show peroxidase granules. Therefore the Sato stain easily differentiates the myelogenous from the nonmyelogenous blood cells.

NONSPECIFIC TREATMENT OF HYPERSENSITIVENESS

To the Editor—I have a case of persistent urticaria in which diets and test diets have failed to give satisfactory evidence of a specific cause. Will you please outline all known methods with references for the non-specific treatment of hypersensitiveness? I have already used epinephrine, ephedrine and atropine but the relief is temporary and the side actions are becoming increasingly unpleasant. What is the present status of calcium and arsenic? Please omit name.

M.D. New York

ANSWER—Several other investigations in addition to those mentioned are suggested as a guide to the treatment of this case. Chronic infections, especially those of the teeth and the gallbladder, play a not infrequent part in the causation of urticaria. Gastrointestinal factors should be investigated especially the possible presence of a hypochlorhydria. In an occasional case a thyroid deficiency, as found by basal metabolism determination points the way to the appropriate remedy. In addition to food factors one should also investigate the possibility of physical allergy—due to heat or cold. Many instances are markedly aggravated by nervous and psychic factors and some persons seem to have the condition caused entirely by emotional disturbances.

If these investigations have yielded no response, less specific means should be tried. It will be possible to describe only a few of the methods here. Calcium lactate or gluconate orally or calcium gluconate or chloride intravenously is of help in some instances, although the blood serum in urticaria does not show a calcium deficiency. Parathyroid extract-Collip, from 4 to 8 units subcutaneously, given at first every day and then less frequently, has been of great benefit in many cases. Some report gratifying results from autohemotherapy. The action of bacterial vaccines is probably a nonspecific one. Five-tenths gram of peptone taken from half an hour to an hour before each meal produces temporary desensitization in some instances. A more drastic measure, which may be tried in a desperate case is fever therapy.

Dilute hydrochloric acid or urea nitrate from 0.2 to 0.4 Gm with each meal helps at times. A diet poor in sodium chloride has been recommended. Sedatives to allay the irritation and itching are frequently indicated. Salicylates are sometimes of value. There is nothing of any established value in the use of arsenic.

TREATMENT OF HOOKWORM DISEASE

To the Editor—Please give me the safest drugs for use in the treatment of hookworm disease. In your opinion what is advisable as to both efficiency and safety in the use of ferric sulphate as advised by Colby and Schaffie? Please omit name.

M D Georgia

ANSWER—Of the thoroughly tested anthelmintics carbon tetrachloride is probably the most effective and, if properly controlled, the least toxic. It is however in common with thymol, chenopodium and other well known drugs, quite toxic under certain conditions. It can be given in large quantities to man and animals in proper calcium balance but if sufficient calcium is lacking a guanidine intoxication follows often resulting in death. This can be controlled by proper calcium therapy. For adults, carbon tetrachloride is generally given in doses of 3 cc, but some use as low as 1.5 cc or as high as 5 or even 10 cc. Treatment should never be repeated in less than a week. It can be given in capsules or in water or milk and is generally followed within an hour by a magnesium sulphate purge. Carbon tetrachloride is not so effective against *Ascaris*, and when both worms are present many workers give carbon tetrachloride mixed with oil of chenopodium—as for example 2 cc of carbon tetrachloride and 1.25 cc of oil of chenopodium.

Among the more recent drugs that give great promise is hexylresorcinol, which apparently not only removes hookworms but *Ascaris* and to a less extent trichurias and possibly tapeworms. Patients of 12 years or above are given 1 Gm and children 0.5 Gm. It is administered best in the morning on an empty stomach without food for four or five hours. A saline purge is often given but is not necessary. Although practically nontoxic it exerts a local irritant action if chewed in the mouth. Gelatin capsules cannot be used and various oils and syrups are unsatisfactory. The best method of administration is a pill made by Sharp and Dohme, in which the crystals are rolled into a ball and coated with sugar.

We do not know of any conclusive demonstration of the effectiveness of ferric sulphate.

TREATMENT OF LUPUS VULGARIS

To the Editor—Kindly inform me whether in recent years there has been any new development in the treatment of lupus vulgaris aside from the usual methods described in textbooks such as ultraviolet radiation, x-rays and radium along with general supporting measures. An American woman afflicted with this condition and resident in Brazil has asked advice concerning the possibility of returning to New York for the purpose of taking intravenous injections of some gold compound which is entirely unknown to me. The patient believes that these injections have benefited her in the past. I should appreciate advice on the latest methods in the treatment of lupus in order that I may intelligently refer the patient to the source of the best available treatment. Please do not publish my name.

M D Brazil

ANSWER—The most valuable recent addition to the therapy of lupus vulgaris is the Gerson-Hermansdorfer-Sauerbruch diet, in which salt is restricted as much as possible, a sodium-free substitute being used to flavor the food. Meats are also restricted, but milk and eggs are given freely and raw fruits and vegetables and their juices are pushed. Cooked fruits and vegetables are also used and phosphorized cod liver oil is given. This has a decided effect on the general metabolism but a much greater one on the skin, reducing the sodium content and consequently the water. Calcium and magnesium are also reduced but are supplied as medicine. Potassium is increased in the skin. This raises the resistance of the skin and many cases of lupus vulgaris that have resisted ordinary treatment are cured by the diet alone, others being cured by diet and

local treatment. Several or many months are required for the full benefit to appear.

Dr Dorffel (*Proc. Staff Meet., Mayo Clin.* 7:73 [Feb. 10, 1932]), who has studied the effects of this diet thoroughly, believes that it in many cases increases the sensitivity of the skin to old tuberculin, ultraviolet rays, chrysarobin, croton oil and mustard. The Gerson-Hermansdorfer diet was described in the Berlin letter in *THE JOURNAL*, Sept. 14, 1929, page 861.

Founded on the discovery of Koch that gold cyanide is the most active deterrent to growth on culture medium of the tubercle bacillus, gold salts have been given intravenously in the treatment of various forms of tuberculosis for some time. Their effects have been disappointing except in lupus erythematosus in which they have been so successful that they are now regarded as the chief treatment. They fail to benefit some cases of lupus erythematosus and are still more often disappointing in lupus vulgaris. After much experience the dose has been reduced. Of gold sodium thiosulphate used generally in the United States, the maximum dose is 0.1 Gm, and excellent results from smaller doses are obtained in many cases. It is given once a week for from ten to twenty, sometimes more, weeks. All precautions against kidney, liver or skin irritation must be taken just as in the case of the arsphenamines. Untoward symptoms from overdosage of the gold salts resemble closely those from arsphenamine.

HYPEREMESIS AND ATTEMPTED ABORTION

To the Editor—One of my patients has been subjected to vomiting every morning and sometimes during the day. Although this is only one of the symptoms of pregnancy, it is more severe than in the usual case. She has a history of repeated attempts at abortion, none of which were successful. March 12, one month from the time of conception, she took manganese dioxide. Two weeks later she tried a compound of aloin and canella and finally she took some ergotinapiol pills. All of these chemicals produced only stomach pains. She is only 18 and this is her first experience of this kind. Being in desperation she had an attempt made of emptying the uterus by mechanical means—tamponage. With her cervix packed for about eleven hours she lived in fright. At the end of that time she pulled out all the gauze. There have been no symptoms of septicemia. The vagina and cervix on examination appear normal. Is there any connection between this vomiting and attempts at abortion? Will attempts such as these affect the child in any way? At no time did anything pierce or go into the uterus any farther than the internal orifice of the uterus.

M D

ANSWER—The vomiting in this case is not due to the repeated attempts to produce abortion. Both the vomiting and the efforts to terminate the pregnancy are manifestations that the patient does not want to remain pregnant. The former is unconscious and the latter deliberate but the two give the same information in this particular individual. It is well known that in most cases of severe vomiting of pregnancy, the true causes of hyperemesis gravidarum are a large psychic element. This is distinctly true in the early stages of hyperemesis before the toxic symptoms arise from starvation and other causes. Because of this, some patients with hyperemesis can be cured at the beginning of the illness by means of suggestive therapy alone.

The repeated efforts of this patient prove that it is usually impossible to disrupt a normal gestation by drugs and even by mechanical measures unless the latter invade the uterine cavity. The means which this patient used, including the gauze packing in the cervix, almost certainly have not had deleterious effect on the development of the fetus. Nearly always when the ovum is harmed during the early months of gestation it is expelled spontaneously.

MULTIPLE EMBOLI

To the Editor—I have recently seen a Gentile woman aged 48 who gave a history of having her arm suddenly drop to her side while sweeping. It turned blue and remained pulseless for five weeks with constant pain. Spontaneous recovery ensued except for absent pulse and incomplete function. Some weeks later the patient had an attack of violent abdominal pain with vomiting two weeks after which pain developed in the opposite foot. She was treated for rheumatism and neuritis. After several weeks the foot became blue but with no white or red stage and partial spontaneous recovery occurred though the patient was unable to walk. At present a second attack in the same foot of gradual onset covering several hours has occurred. The foot is mottled blue and white, blanching on elevation except the sole. Only one side is involved. The patient's temperature is 100. Diagnosis of Raynaud's disease was made by some one also the more colorful one of Buerger's disease while the country doctor let it go at emboli. Your opinion will be gratefully appreciated. Please omit name.

M D Michigan

ANSWER—The disappearance of pulsation in the arm, with changes in color, is probably due to arterial occlusion. The fact that this occlusive process is multiple, probably in the arteries of the abdomen and lower part of a leg makes the diagnosis of embolism tenable. The pain is apparently sec-

ondary to ischemia, probably ischemic neuritis. Emboli usually are one of three types: (1) detached mural thrombi or vegetative thrombi from the heart such as are seen in valvular diseases or in auricular fibrillation; (2) the multiple products of spontaneous simple thrombosis, the origin of which is probably some disturbance in the coagulability of the blood; (3) in older subjects detached thrombi from arteriosclerotic plaques on the larger arteries. The rapid course seems to rule out the more chronic arterial occlusive lesions, such as thromboangiitis obliterans or arteriosclerotic disease.

TREATMENT OF DIABETES

To the Editor—A diabetic woman aged 35 married who is of the Lorrain Levi type 4 feet 8 inches (142 cm) tall weighed 59 pounds (27 kg) when I first saw her about one year ago. Her mother died in diabetic coma. The patient had not worked for a year. She had not menstruated for two years and her nails had almost completely degenerated. She was acidotic. She was placed on a high carbohydrate and protein diet with large doses of insulin and went back to work in three months. Her nails have completely regenerated and her menstrual function returned with a normal rhythm four months ago. She now weighs 123 pounds (56 kg) is well rounded and never felt so well in all her life. Her status has been determined as almost totally diabetic. Here is the problem. She is now on a diet of 110 Gm carbohydrate, 45 Gm protein and 60 Gm fat with 130 units of insulin daily. She always has a blood sugar above 200 and excretes from 0.5 to 4 per cent of sugar in the twenty-four hour specimen. In spite of fractionation of urines and regulated insulin dosage I have been unable to change this status. There is no evidence of kidney damage, no disturbance of pancreatic function and no complaints. At times her blood sugar is above 300. I have definitely established that there is no cheating yet I cannot account for the wide fluctuation. Is there a pancreatic adenoma? What can be done? Please omit name.

M D New York

ANSWER—Certainly there is no evidence of a pancreatic adenoma in this interesting case. In all previously reported cases of tumor of the pancreas hypoglycemia rather than hyperglycemia was present. In studying what has been done for this patient, one wonders whether an even higher diet might not be more satisfactory than the one given. It has been noted by many observers that both total calories and carbohydrates may be increased in some diabetic patients without a corresponding increase in the insulin intake. In other words, this means that the insulin sometimes works better when there is a larger amount of carbohydrate to work on. At any rate it is worth trying. The carbohydrate should be raised perhaps 15 or 20 Gm daily without at first increasing the insulin.

INTERCOSTAL NEURITIS ASSOCIATED WITH INJURED CARTILAGE

To the Editor—I should like your opinion on the following case. A girl aged 19 complains of pain and occasional swelling in the region of the left lower anterior ribs of a year's duration. She received a blow in that region a year ago. Palpation reveals a loose cartilage. Roentgen examination is negative of course. Will diathermy and strapping bring complete relief? Is surgery ever used in these cases?

A VANDER LEE, M D New York

ANSWER—The occurrence of pain and swelling in the region of the left lower ribs anteriorly following an injury is not unusual. The swelling is probably due to a prominence of the end of the cartilage which has been torn loose. There is an intercostal neuritis, probably due to displacement of the cartilage with tension on the nerve. Strapping of the region with adhesive plaster may give relief and may be discontinued after a short time. Diathermy may be tried for a short time. If no relief is obtained injection of the intercostal nerve with procaine hydrochloride followed by a little 95 per cent alcohol may give relief. As a rule nothing need be done for the loose cartilage, as the condition usually is without symptoms. If injection of the nerve is not feasible it may be cut down on and either injected with alcohol alone or cut in addition to the injection.

DERMATITIS IN SILK INDUSTRY

To the Editor—Please advise me what forms of dermatitis occur in employees of silk mills and whether or not there is a book published describing the forms of the skin conditions caused from working in a silk industry.

J ORIS LIVEN, M D Atmore Ala

ANSWER—Starting with the raw silk it is possible that a dermatitis may be produced by the silk glue, sericin, which is easily removed in the silk manipulative processes usually by hot solutions of soap and (or) alkalis. Thereafter in many stages of silk preparation various chemicals are used in weighting, lustering, delustering, sizing and finishing. Scores of chemicals and combinations of chemicals are employed. Nearly every plant utilizes slightly different processes, many of them

guarded as trade secrets. Later, in preparation for dyeing and in dyeing, many other chemicals are employed.

In the making of artificial silk, in contrast to natural silk, the number of chemicals employed is usually higher, and prospects of dermatitis are always greater. Among other substances that have been used, in natural or artificial silk manufacture or in both, are thiosulphates, Irish moss, formaldehyde-phenolic resins, diethylphthalate, xylene sulphonamide, paratoluene sulphonamide, monomethyl-xylene sulphonamide, beeswax, tragacanth, spermaceti, cetyl alcohol. Japan wax, stearic acid, acacia (gum arabic), gelatin, turkey red and various other oils, polysulphates, trichlorethylene, sodium carbonate, sodium sulphate, magnesium chloride, dextrans, kana gum, starch, mineral acids and organic acids.

It is not known that books devoted to dermatoses in this industry have been written. More information may be gained by referring to comprehensive treatises of the silk and rayon industries in which are listed various chemical substances that have been found to be serviceable toward industrial ends. It will be readily recognized that many of these chemicals are skin irritants and that suitable exposure may be followed by chemical dermatitis.

DEAFNESS FOLLOWING INFECTION OF VESTIBULE

To the Editor—Can you suggest a treatment that will help in a case of infection of the vestibule? The infection occurred when the patient was traveling on a badly ventilated train over a year ago. When the patient awoke in the morning there was an acute coryza, fever and chill. Within twenty-four hours it had spread to the middle ear and caused deafness and headache with fever. A week in a hospital relieved the general symptoms but deafness continued about three months and was accompanied with giddiness and other symptoms of involvement of the vestibule. The eustachian tubes continued to be occluded until quite recently. Even now the passage of the eustachian catheter is not altogether satisfactory. The specialist attending does not think that he can do any more to relieve the condition. The present condition is perforation of the right drum from childhood, no discharge occurs but there is very little hearing. The left drum is now healthy looking. There is no discharge or discomfort in the nose. The voice sounds go out through the right ear and the voice does not seem right. Musical notes sound out through the right ear and not of the correct note. There is no giddiness now. Confusion and deafness occur when the patient is in a room full of people or in the presence of much noise. Please omit name.

M D Newfoundland

ANSWER—It is quite possible to have involvement of both the cochlear and the vestibular apparatus of the inner ear, as a result of a toxemia resulting from some acute infection. Complete functional testing of the hearing would show whether at the present time there is still considerable impairment of the inner ear or whether it is the conduction apparatus that is having the trouble. If it is involvement of the perception apparatus the use of an alternative such as potassium iodide, might be of some service. For the relief of the difficulty in the right ear which has been present since childhood it is doubtful whether much can be done. "Confusion and deafness when in a room full of people or in the presence of much noise" is usually noted when there is a marked impairment of hearing. It is possible that the use of a proper aid to hearing would be of service in this condition.

UNILATERAL CYANOSIS

To the Editor—I would be pleased if you could give me some help as to the etiology of unilateral cyanosis limited to the left hand, forearm and arm. The case is one of a 4 months old infant previously healthy in every respect. The mother observed that when the child was placed on its abdomen the hand became blue then the forearm and arm. The phenomena occur in less than two minutes and when the child is placed in the dorsal position the cyanosis clears up. There is no associated pain and the child is contented and happy. Roentgen examination of the chest is negative and no palpable masses can be elicited in the axilla. Kindly omit name.

M D West Virginia

ANSWER—Unilateral cyanosis in an infant suggests the following possibilities: 1. Congenital dilatation of the veins, the so-called phlebectasia. This condition usually carries with it no serious significance and is symptomless. 2. Venous obstruction such as that caused by congenital anomaly of the cervical rib. The fact that this condition changes with changes in posture raises the possibility of some anomaly of the bony structures of the neck. 3. Pressure from a new growth. This seems fairly well ruled out by the fact that the cyanosis can be modified by the posture of the child.

There is one additional condition to consider, arteriovenous fistula in which there is distention of the veins from an abnormal communication with the arteries. In this condition the affected extremity would be hotter than the opposite and the veins would contain arterial blood.

Thrombophlebitis seems eliminated by the absence of swelling.

BRONCHIOMONILIASIS

To the Editor—A woman aged 22, single gives a history not unlike that of insidious tuberculosis—chronic fatigue, pain over the upper part of the chest, hoarseness, afternoon elevation of temperature and blood tinged sputum. Physical examination of the chest gives negative result. Roentgen examination of the chest made at the local tuberculosis hospital and also by the state examining chest clinic showed no pulmonary pathologic changes. Repeated examinations were negative. Repeated sputum examinations were negative for tubercle bacilli. The state department of health, however, found on sputum testing a yeastlike microorganism resembling *Monilia*. Other specimens of sputum were tested for and the final report sent me was that the yeastlike microorganisms were a *monilia* which proved to be pathologic for white rats. Can this organism be the cause of the symptoms in this case? There are no symptoms of sprue with which *Monilia* is mostly associated. I can find no description in tests of similar conditions being produced by *Monilia*. Please omit name.

M D New York

ANSWER—This case could easily be one of what Castellani has called bronchomoniliasis, but it is either a mildly virulent or a beginning case, for usually there are physical signs of localized lesions confirmed by x-ray shadows. The important finding here is a *monilia* pathogenic for white rats. Such a *monilia* is apt to be *Monilia albicans* as this is a pathogenic organism not only of thrush but also of sprue, bronchomoniliasis and moniliasis of the skin. Ashford writes that he no longer believes in his own *Monilia psilosis* or in Castellani's many pathogenic species as entitled to separate designations and believes that all these pathogenic species should be referred to as *Monilia albicans* until some other method than that by sugar fermentation tests becomes available to show differential characteristics. The reader is referred to the article of T. R. Boggs and M. C. Pincoffs entitled "A Case of Pulmonary Moniliasis in the United States" (*J. A. Am. Phys.* 30:474, 1915 *Bull. Johns Hopkins Hosp.* 26:407, 1915).

INDICATIONS FOR CALDWELL-LUC ANTRUM OPERATION

To the Editor—What are the indications for the Caldwell-Luc antrum operation? Is it now commonly done? Please omit name.

M D, Indiana

ANSWER—The Caldwell-Luc operation on the maxillary sinus is used quite frequently at the present time. When a chronic infection of the antrum of Highmore is not relieved or improved by relatively simple procedures such as making an opening into the antrum by way of the inferior meatus, it is advisable to do an operation of the Caldwell-Luc or similar type, in order that a complete inspection of the antral cavity may be had. Not only when a definite suppuration is present but in cases of polyp formation or when a neoplasm is suspected, inspection of the maxillary sinus, by way of the canine fossa, offers the best opportunity for making a definite diagnosis before removing pathologic tissue.

TRENDELENBURG TESTS OF VARICOSE VEINS

To the Editor—In his book *Varicose Veins* McPheeters states in conclusion "any vein which shows a positive negative double or nil Trendelenburg and which does not increase in size and cause pain when tested with the tourniquet or bandage while walking should be injected. If this is true why all the ado about doing such a test before injecting in these cases?" Please omit name.

M D Pennsylvania

ANSWER—Dr. McPheeters writes: "As the subject being discussed was varicose veins, I took it for granted and assumed that any reader of this test would draw the same conclusion. Certainly no physician would assume that I was meaning normal veins."

Apparently the writer making the inquiry did not carefully read that paragraph. It is accurate and clear and I approve of the test as being more positive and convincing now than when the paragraph was first written. It might be more clear and emphatic if I had said "Any varicose vein which DOES increase in size and cause pain with the tourniquet or bandage applied while walking should NOT be injected. It must be remembered that all these tests are for the BORDERLINE case only and need not be used in each and every case before beginning treatment."

TECHNIC OF CLEARING EMBRYOS

To the Editor—I have spent some time trying to find an account of the technic used in clearing embryos by the use of methyl salicylate. I would appreciate it if you could direct me to a reference or outline the technic for me.

DONALD A. LAIRD, Hamilton N. Y.

Director, Psychological Laboratory, Colgate University

ANSWER—Inject the vessels, if desired. Fix in solution of formaldehyde. Wash out the formaldehyde thoroughly. Bleach in hydrogen dioxide. Run through alcohols up to 100 per cent.

Immerse in benzene. Change two or three times. For large embryos, methyl salicylate 2 parts and benzyl benzoate 1 part or methyl salicylate 18 parts and isosafrol 5 parts are used. For smaller embryos, methyl salicylate 3 parts and benzyl benzoate 1 part or methyl salicylate 27 parts and isosafrol 5 parts. For very small embryos, methyl salicylate 5 parts and benzyl benzoate 1 part or methyl salicylate 9 parts and isosafrol 1 part are used. Pump out with an air pump to get rid of air and benzene. Preserve in the fluid last used. Other methods also are reported by Roméis. Taschenbuch mikroskopischen Technik, Berlin, R. Oldenbourg. Sold in America by G. E. Stechert, 31 East Tenth Street, New York.

DETERMINATION OF BLOOD UREA

To the Editor—Will you please advise me as to the value of the modified urea nitrogen micromethod of W. G. Karr. The method uses gum ghatti and nesslerization of protein free filtrate. Is this method as good as the methods using the mercury combining power of blood as an index such as the Hensch Aldrich? Please omit name and address.

M D Kansas

ANSWER—The Taylor-Blair modification of the Karr procedure for blood urea nitrogen by direct nesslerization is no doubt an improvement on the Karr method and appears to compare favorably with the older standard aeration and distillation methods after urease action. The method is more specific for urea than the Hensch Aldrich procedure for urea in saliva or urine.

POSTHERPETIC NEURALGIA

To the Editor—Will you please tell me if there is any method of treating a postherpetic neuralgia aside from local applications of cocaine ointment and morphine. Please omit name.

M D New York

ANSWER—In spite of the fact that the lesion in postherpetic neuralgia is in the ganglion, experience has shown that some times considerable benefit has been obtained from injection of the nerve concerned at its foramen of exit. Thus, cases of supra-orbital herpes may be improved by injection in the supra-orbital foramen. Cases of intercostal lumbar neuralgia may be improved by injection of procaine hydrochloride followed by salt solution or dilute alcohol at the corresponding intervertebral foramina.

FEEDING OF BILE AFTER BILIARY DRAINAGE

To the Editor—Kindly advise me regarding the feeding of bile back to the patient as it drains out by a cholecystostomy tube. The patient has a tumor obstructing the common duct which is inoperable and a tube was placed in the gallbladder for drainage. Would it not be well to give her that bile by mouth once or twice a day? Please omit name.

M D Kentucky

ANSWER—Yes. This is particularly advisable when biliary drainage is continued for a long period, because by its use severe anemia may be prevented. In the case mentioned here it probably does not make much difference if the lesion is a malignant tumor.

ELECTRORESECTION OF THE PROSTATE

To the Editor—I have a friend who is suffering with a slight enlargement of the prostate. Is the galvanocautery the treatment of choice in cases of slight enlargement of the prostate or has the cautery operation superseded prostatectomy? Please omit name.

M D Canal Zone

ANSWER—Transurethral electroresection is considered the operation of choice by many urologists in the correction of small and moderate sized enlargements of the prostate gland. Some are even employing this method in the treatment of the larger hypertrophies.

DUOCHROME DISC FOR REFRACTION

To the Editor—I have received a circular on the Sears Duo-Chrome Disc for duo chrome refraction. Please advise me as to the practical merits of this method of refraction?

J. B. H. Waring, M D, Wilmington, Ohio

ANSWER—The Sears Duo-Chrome Disc is merely another device on the market trying to substitute a manifest refraction for conscientious refraction with cycloplegia. Accommodation is not and cannot be suspended by this or any similar device and as long as accommodation is one of the decisive factors of careful refraction, cycloplegia cannot be dispensed with. If the refractonist is satisfied with by-guess methods, he can come as near to the actual refractive error with the duo chrome disc as he can with any of the other methods of the drugless glass-fitter.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery Jan 9 13 Sec Dr J N Baker 519 Dexter Ave Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Oral New York Dec 15 16 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B Candidates) The examinations will be held in various cities of the United States and Canada Dec 9 Sec Dr Paul Titus 1015 Highland Bldg, Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Cleveland June 11 Sec Dr William H Wilder 122 S Michigan Blvd, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Cleveland June 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

ARIZONA Phoenix Jan 23 Sec Dr J H Patterson, 320 Security Bldg Phoenix

CALIFORNIA Reciprocity Los Angeles Dec 6 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver Jan 2 Sec, Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT Endorsement Hartford Nov 28 Sec Dr Thomas P Murdock 147 W Main St Meriden

DELAWARE Wilmington Dec 12 14 Sec Dr Harold I Springer 1013 Washington St Wilmington

DISTRICT OF COLUMBIA Washington Jan 8 9 Sec Dr W C Fowler 203 District Bldg Washington

KANSAS Topeka Dec 12 13 Sec Dr C H Ewing Larned

KENTUCKY Louisville, Dec 5 7 Sec Dr A T McCormack 532 W Main St Louisville

MARYLAND Regular Baltimore Dec 12 15 Sec Dr Henry M Fitzhugh 1211 Cathedral St Baltimore Homeopathy Baltimore, Dec 13 14 Sec Dr John A Evans 612 W 40th St Baltimore

MINNESOTA Basic Science Minneapolis Jan 23 Sec Dr J C McKinley 126 Millard Hall University of Minnesota Minneapolis

NATIONAL BOARD OF MEDICAL EXAMINERS The examinations will be held at centers in the United States where there are five or more candidates Feb 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NORTH CAROLINA Raleigh Dec 2 Sec Dr B J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 2 Sec Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OHIO Columbus Dec 6 8 Sec, Dr H M Platter 21 W Broad St Columbus

OREGON Jan 24 Sec Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia Jan 26 Sec, Mr W M Demison 400 Education Bldg, Harrisburg

RHODE ISLAND Providence Jan 4 5 Dir Dr Lester A Round 319 State Office Bldg Providence

VIRGINIA Richmond, Dec 6 8 Sec Dr J W Preston 29 1/2 Franklin Road Roanoke

WASHINGTON Basic Science Seattle Jan 11 12 Regular Seattle Jan 15 16 Dir Mr Harry C Huse Olympia

WISCONSIN Basic Science Milwaukee Dec 16 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee Regular Madison Jan 9 12 Sec Dr Robert E Flynn 401 Main St LaCrosse

Massachusetts May Examination

Dr Stephen Rushmore, secretary, Massachusetts Board of Registration in Medicine, reports the oral and written examination held May 23 25 1933. The examination included 64 questions. An average of 75 per cent was required to pass. Ninety-eight candidates were examined 34 of whom passed and 64 failed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1919)	75	
Emory University School of Medicine	(1928)	75	
Boston University School of Medicine	(1932)	75	3
College of Physicians and Surgeons Boston	(1932)	75	
Harvard University Medical School	(1928)	79	
(1911) 82 6 81 5 (1912) 79 2 79 5			
Middlesex College of Medicine and Surgery Boston	(1930)	79	2
(1931) 75 52 76 1, 76 3 (1932) 76			
Tufts College Medical School	(1931)	76	4
87 79 79 85 3			
University of Oregon Medical School	(1931)	77	1
Jefferson Medical College of Philadelphia	(1932)	78	
Temple University School of Medicine	(1932)	78	2
Woman's Medical College of Pennsylvania	(1910)	78	5
University of Tennessee College of Medicine	(1929)	79	7
McAll University Faculty of Medicine	(1921) 75	(1931)	82
University of Beirut School of Medicine	(1913)	7	
Osteopaths		8	6 5
College	FAILED	Year Grad	Per Cent
Georgetown University School of Medicine	(1911)	64	1
College of Physicians and Surgeons Boston	(1911)	64	2
45 (1911) 5			
Middlesex College of Medicine and Surgery Boston	(1922)	62	2
(1911) 55 6 55 6 (1929) 52 51 3			
64 6 64 6 (1930) 61 69 (1931) 64 69 5			
Tufts College Medical School	(1911) 74		

Kansas City Univ of Phys and Surgs Missouri (1929) 69 1
(1930) 63 7 (1931) 55 5 (1932) 54 66 5, 67 8
68 8 69 2 73 1, (1933) 51 58 66 70 4
Missouri College of Medicine and Science (1927) 63 5
St Louis College of Physicians and Surgeons Missouri (1920) 34,
(1923) 49 5
Hahnemann Medical College and Hosp of Philadelphia (1932) 71 2
University of Vermont College of Medicine (1932) 72 3
Laval University Faculty of Medicine (1925) 63 9
University of Montreal Faculty of Medicine (1932) 67 2
Regia Università di Roma degli studi Facoltà di Medicina e Chirurgia (1925) 19 7
Osteopaths* 44 5, 51 2,
52 3 55 2 56 9 57 7, 60 8, 62 7 66 2 66 7 69 71 1, 72 75 2, 73 5

Thirty-one physicians were licensed by endorsement from February 9 to July 28. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Physicians and Surgeons of Chicago	(1906) N B M Ex.		
Johns Hopkins University School of Medicine	(1922)		
(1925) (1929) N B M Ex			
Boston University School of Medicine	(1931) N B M Ex.		
Harvard University Medical School	(1928)		
(1929 3) (1930 5) (1931, 7) N B M Ex			
Tufts College Medical School	(1931 4)	(1932 2) N B M Ex	
University of Michigan Medical School	(1928) N B M Ex.		
Albany Medical College	(1929) N B M Ex.		
Cornell University Medical College	(1932) N B M Ex.		
McGill University Faculty of Medicine	(1931) N B M Ex.		
* Examined in medicine and surgery			

Missouri June Examination

Dr E T McLaugh state health commissioner, reports the written examination held in St Louis, June 7-9, 1933. The examination covered 14 subjects and included 97 questions. An average of 75 per cent was required to pass. Two hundred and one candidates were examined, all of whom passed. Sixteen physicians were licensed by reciprocity and 3 by endorsement. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine		(1932)	82 7
University of Colorado School of Medicine		(1932)	87 3
Howard University College of Medicine		(1932)	83 4
84 5 85 85 85 3 85 6 88 8			
Northwestern University Medical School		(1933)	87, 87 6
Rush Medical College	(1932) 83 3	(1933)	86 5
University of Illinois College of Medicine		(1933)	86 7
University of Kansas School of Medicine		(1932)	80 6
82 3 87 6 (1933) 83 4			
University of Louisville School of Medicine		(1932)	85 1
86 1 86 5 (1933) 83 4			
Harvard University Medical School	(1929) 83 8	(1932)	89 2
University of Minnesota Medical School		(1933) 84 1	85 3
St Louis University School of Medicine		(1929)	85 6
(1932) 83 5 84 1 84 1 85 3 88 3 (1933) 80 9, 81 3			
81 3 81 6 82 3 82 6 82 7 82 9 83 8 83 1 83 2 83 2			
83 2 83 3 83 6 83 6 83 7 84 84 1 84 1 84 2 84 3			
84 3 84 3 84 3 84 3, 84 3 84 4 84 5 84 6 84 8			
84 8 84 8 84 8 84 8, 84 9, 85 85 1 85 1 85 1 85 1			
85 1 85 2 85 2 85 3 85 3, 85 3 85 4 85 5 85 6 85 6			
85 6 85 6, 85 8 85 8 85 8 85 9 85 9 86 6 86 6			
86 2 86 6 86 6 86 6 86 6 86 8 87, 87 3 87 5 87 5			
87 8 87 8 88 3 88 5 89 1 90 1			
Washington University School of Medicine		(1927)	86 1
(1931) 87 2 88 5 (1932) 81 9 83 1 85 1 85 5 85 6			
86 4 87 87 (1933) 80 2 81 3 82 4 82 4 82 9 83 2			
83 2 83 4 83 7 83 7 83 8 83 9 84 1 84 1 84 1			
84 1 84 1 84 1 84 2 84 3 84 4 84 5 84 6 84 6			
84 7 84 8 84 8 84 9 84 9 84 9, 85 1, 85 1, 85 3			
85 4 85 4 85 4 85 4 85 5 85 6 85 6 85 8 85 8			
85 9 86 1 86 3 86 3, 86 3 86 3 86 3 86 4 86 5 86 6			
86 6 86 6 86 6 86 7, 87 1 87 1 87 4 87 4 87 5 87 8,			
88 88 5 88 8 88 8 88 9 89 2, 89 3 89 2			
University of Nebraska College of Medicine		(1932)	83 8
New York University, University and Bellevue Hospital Medical College		(1932)	94 6
University of Oklahoma School of Medicine		(1932)	87 1
University of Pennsylvania School of Medicine		(1932)	84 6
Meharry Medical College		(1932)	86 6
University of Tennessee College of Medicine		(1931)	82 8
(1932) 83 4			
Vanderbilt University School of Medicine		(1930)	84 7
College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine		(1927)	Oklahoma
Howard University College of Medicine		(1930)	Kansas
Northwestern University Medical School		(1931)	Illinois
(1929) Minnesota			
Indiana University School of Medicine		(1931)	Indiana
University of Kansas School of Medicine		(1932 3)	Kansas
Tulane University of Louisiana School of Medicine		(1932)	Louisiana
University of Nebraska College of Medicine		(1930)	Nebraska
College of Physicians and Surgeons Columbia College		(1885)	New York
Ohio Medical University		(1903)	Oklahoma
University of Oklahoma School of Medicine		(1932)	Oklahoma
Meharry Medical College		(1932)	Tennessee
University of Tennessee College of Medicine		(1931)	Tennessee
University of Texas School of Medicine		(1930)	Texas
College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement with
Johns Hopkins University School of Medicine		(1930) N B M Ex.	
Harvard University Medical School		(1931) N B M Ex.	
University of Nebraska College of Medicine		(1932) N B M Ex.	

Book Notices

The Therapeutic Agents of the Quinoline Group Cinchophen Plasmoquine Nupercaine, Quinine and Acridine Dyes the Relation Between Their Chemical Constitution and Pharmacologic Action By W. I. von Oettingen M.D. Ph.D. Assistant Professor of Pharmacology School of Medicine Western Reserve University Cleveland Ohio American Chemical Society Monograph Series No. 61 Cloth Price \$6 Pp 301 with 10 illustrations New York Chemical Catalog Company Inc 1933

Chemical agents derived from the quinoline nucleus have found wide usage in therapeutics. Such common and well known drugs as quinine and its derivatives oxyquinoline sulphate, cinchophen, nupercaine and the acriflavines are related to quinoline. With the exception of quinine and its naturally occurring chemical relations, most of the drugs in the quinoline group are the result of laboratory investigation. Many of them have been produced and found their usefulness since the World War. The chemical and the pharmacologic and therapeutic literature on this group of drugs of diverse use is widely scattered in the chemical, pharmacologic and medical literature. Dr. von Oettingen has made a worth-while contribution to the literature of chemistry, pharmacology and therapeutics by collecting between two covers this widely scattered information. The book, however, is not a mere compilation of data. It is a careful attempt to correlate, whenever the data permit, the ground already gained and, even more important, the path along which future progress may be made. The material in the book will be of little interest to the general practitioner, but for the practitioner interested in the manner by which drugs are therapeutically established there will be much information. Here the book should be welcome to the thoughtful practitioner, particularly in respect to such drugs as cinchophen, the importance of which both as an agent for good and as an agent for harm has already been appreciated, and nupercaine, as representative of the group of local anesthetics derived from quinoline. For the investigator on chemistry and drug action there is much of value, here the book should be welcome and extremely useful. The author understands not only pharmacology but also chemistry and medicine. It was indeed fortunate that the American Chemical Society could obtain one of Dr. von Oettingen's versatility to handle such a restricted field as that of the quinoline group. There are a number of tables and charts, summarizing the literature, apart from the descriptive material. This book is one of a series of monographs published under the auspices of the American Chemical Society. It indicates the close dependence of medicine on chemistry.

Röntgenatlas der Lungenerkrankungen Ein Leitfad für Ärzte Von Dr. W. Brednow Privatdozent für Innere Medizin und Röntgenologie an der Universität Göttingen und Dr. F. Hofmann Facharzt für Röntgenologie Stadt Krankenhaus Wuppertal Barmen Second edition Paper Price 10.00 marks Pp 207 with 105 illustrations Berlin & Vienna Urban & Schwarzenberg 1933

This atlas consists of a collection of more than a hundred excellent full-page reproductions of roentgenograms illustrating normal and abnormal conditions of the lungs. The value of the reproductions is greatly enhanced by the accompanying legends, which point out the changes to be observed and their significance. Since the book is designed primarily for the general practitioner, it contains concise information about the course of various diseases, certain favorable and unfavorable changes that may occur during the progress of the condition, and therapeutic hints, particularly section of the phrenic nerve, and collapse treatment. It is pointed out that several disease conditions may produce similar roentgenographic changes and that a final diagnosis of pulmonary disease should not be based on a roentgenogram alone. The material is so arranged that normal aspects are first described. Then follows a rather complete presentation of pulmonary tuberculosis. The value of oblique exposures is emphasized in certain obscure instances. Nontuberculous conditions such as pneumonia, pulmonary infarct, abscess, silicosis, tumor and pleural diseases are then illustrated and described. The value of the book would be enhanced by including some reproductions of bronchography. Some of the changes of the pleura shown in the illustrations are not very distinct. This atlas is in every sense a useful and practical aid for the clinician for whom it is primarily designed rather than for the expert roentgenologist.

Operative Surgery The Abdomen and Rectum By Dr. Martin Kirschner Ordinarius Professor of Surgery and Director of the Surgical Clinic at the University of Tübingen (Germany) Volume 2 Authorized translation by I. S. Ravdin B.S. M.D. J. William White Professor of Research Surgery University of Pennsylvania Cloth Price \$12 Pp 569 with 395 illustrations Philadelphia J. B. Lippincott Company 1933

The second volume of Kirschner's Operative Surgery, appearing two years after the first, which was received enthusiastically, equals it in quality and appearance. This one deals with the various conditions affecting the abdomen and rectum and covers the field thoroughly and completely in seven chapters. The careful consideration of abdominal incisions and operative procedures on the gastro-intestinal tract is followed by an extensive description of the various operations on the stomach and duodenum. The operations on the small and large intestines, as well as on the rectum, including the procedures to be followed in cases of mechanical and paralytic ileus, are treated in great detail. The same may be said of the discussion of the operations on the gallbladder and parenchymatous abdominal organs which concludes the work. The subjects treated are fully covered clearly presented and easy to follow, enhanced no doubt by the excellence of the translation. The numerous beautiful illustrations, mostly in color, which clarify and emphasize the important points in the text, are the great feature of the book. The work is an unusually excellent contribution and is highly recommended to young as well as experienced surgeons.

Ophothérapie endocrinienne Les bases physiologiques les syndromes la posologie de l'ophothérapie Par Guy Taroche professeur agrégé à la Faculté de médecine de Paris Second edition Paper 48 francs. Pp 396 with 19 illustrations Paris Masson & Cie 1933

A chapter on liver therapy in pernicious anemia has been added and the chapter on the pancreas and insulin revised and enlarged, but the book is still mediocre and of little help to practitioners or research men in this country. There is too little critical evaluation of the thousands of trials, suggestions and recommendations for organotherapy in human disorders, many of them unverified or disproved. Thus the author outlines ovarian organotherapy in toxic goiter, chronic rheumatism and virilism.

Filterable Virus Diseases in Man By Joseph Fine M.D. B.Sc. D.P.H. Assistant to the Prof. of Public Health Edinburgh University Cloth Price \$2.25 Pp 144 Baltimore William Wood & Company 1930

This book gives in compact form the essential facts concerning the virus diseases in man, of which there are listed twenty-four. They are divided into seven groups, whether transmitted by an intermediate host or directly, and whether affecting the skin, the nervous system or the respiratory system. At the end of each chapter is a short but inclusive bibliography. The author has stated the facts concerning the virus diseases concisely and clearly, when authorities have disagreed, he has given all the pertinent evidence on each side of the question. In a few instances in which there are no universally accepted views, such as the identity of the virus of herpes and of epidemic (lethargic) encephalitis, he has given opinions of his own. Foot-and-mouth disease has been omitted. Two tables at the end of the book should prove useful for quick reference. In one, facts are presented concerning the twenty-four virus diseases of man, while in the other are listed brief accounts of all virus diseases of which there was record at the time of writing, including animals, birds, insects and plants.

Traité de physiologie normale et pathologique Publié sous la direction de G. H. Roger professeur honoraire de physiologie à la Faculté de médecine de Paris et Léon Binet professeur de physiologie à la Faculté de médecine de Paris Tome IX. Système nerveux première partie Par MM. Th. Alajouanine I. Bertrand et autres Cloth Price 100 francs Pp 566 with 121 illustrations Paris Masson & Cie 1933

This volume is one of eleven into which the work is divided and is devoted to a review of the knowledge of the nervous system with chapters on the neuron degeneration and regeneration nerves and reflex action, tropisms, cortical localization of function, basal ganglions, cerebral circulation, convulsions, sleep, and a biochemical study of general anesthesia. The chapters written by individual contributors, differ markedly in readability, completeness and the handling of references to the literature, but on the whole the volume will be found useful by those who do not read German or are without access to a German handbook of a similar type.

Medical Biology A Laboratory Manual of Bacteriology Mycology Immunology and Parasitology Consisting of Experimental Guide Interpretive Text Atlas and Protocol Form By William Barnard Sharp S.M. M.D. Ph.D. Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas Medical College Edition Paper Price \$4.50 Pp 443 with 111 illustrations Galveston The Author 1933

This laboratory manual was prepared for the special use of students in the University of Texas School of Medicine and therefore does not necessarily fit the arrangement and scope of courses in other institutions, although it is so written that it can be easily adapted elsewhere. The major portion of the volume is taken up with material usually given to medical students in the course in bacteriology. Two chapters of more advanced work are included however on milk and meat product sanitation and on contamination of foods and drinking water. The final chapter deals with medical zoology, covering the subjects of animal parasites, lice, fleas, flies, mosquitoes, venomous reptiles and marine animals. The author has intended that the student write his own textbook as far as limited time and facilities allow. The handbook contains the salient points, reduced to the least possible number of words, which the student might glean from lectures and standard textbooks, to these he adds his own observations. Simple directions are given the student for each procedure. The manual should be useful in the institution for which it was intended.

The Adrenal Cortex A Surgical and Pathological Study By L. R. Broster O.B.E. M.A. D.M. Surgeon to Charing Cross Hospital and H. W. C. Vines M.A. M.D. Pathologist Charing Cross Hospital Institute of Pathology Boards Price 6s Pp 94 with illustrations London H. K. Lewis & Company Ltd 1933

A concise account is given of seven cases of virilism of supposed suprarenal origin in which unilateral suprarenalectomy was done. The regression of the virilism following this operation was slight and variable. Microchemical studies of the suprarenal cortex of these cases are presented, the authors presenting evidence of an increase in the suprarenal cortex of a specific "fuchsinophilic" substance as a causative factor in this type of virilism.

The Practice of Podiatry By Reuben H. Gross M.Cp. Professor of Podiatry The First Institute of Podiatry and E. K. Burnett Edited by Maurice J. Lewi M.D. Cloth Price \$6 Pp 451 with 72 illustrations New York Harriman Printing Company Inc 1933

This book contains much excellent material that the podiatrist can use in his everyday practice, and in addition some interesting reading on conditions that he should know but should not treat. The latter include such conditions as osteomyelitis, arthritis, syphilis, tuberculosis, diabetes, arteriosclerosis, thromboangitis obliterans and Raynaud's disease. The discussions of most of these subjects are well condensed. The book contains much more material than its title would indicate. The section on the history of foot gear is interesting.

Gynecology for Nurses By George Gelhorn M.D. F.A.C.S. Professor of Clinical Obstetrics and Gynecology Washington University School of Medicine Second edition Cloth Price \$2 Pp 294 with 140 illustrations Philadelphia & London W. B. Saunders Company 1933

This second edition will be welcomed not by nurses alone but by their medical lecturers as well. That the author is a lucid and graphic teacher is immediately obvious to any one who reads this work. The chapters on constitution and on the endocrine system are valuable additions. The chapter on what the nurse should know about cancer is especially praiseworthy. The book closes with a brief but illuminating account of the history of gynecology.

Pediatrics By Henry Dwight Chapin M.A. M.D. and Lawrence T. Royster M.D. Professor of Pediatrics and Head of the Department of Pediatrics University of Virginia Seventh edition revised and rewritten by Lawrence T. Royster Cloth Price \$7 Pp 770 with 149 illustrations Baltimore William Wood & Company 1923

The former editions of this work appeared under the title of 'Diseases of Infants and Children'. In the present edition there has been an extensive recasting and revision of subjects. The first part of the book deals with the phenomena of growth and development. Few one volume textbooks on pediatrics go into the subject with the detail that this one does. It is concisely presented however and covers only the important phe-

nomena of growth and development that are necessary for a comprehensive understanding. The chapter on appraising the child is excellently done. Criteria of normality are presented with the idea of training the physician to determine the status of the child from an examination, without necessary reference to a fixed standard. The usual subjects found in a pediatric textbook are well covered, and unimportant data have been deleted. An invaluable chapter on the care of dependent infants and children has been included. The Speedwell plan fostered by Dr. Chapin, is clearly explained and discussed. This is a distinct contribution of the work and is unique among pediatric textbooks. The material is well organized and presented in an interesting and concise manner. While it is essentially clinical in its manner of presentation, it has been written with the idea of developing in the reader a better grasp of the problems of the normal as well as of the sick infant and child and will serve the needs of both the physician and the undergraduate equally well.

Beitrag zur Pathologie und Epidemiologie der Pellagra (nach Beobachtungen aus Transkaukasien) Von Priv. Doz. Dr. E. G. Nauck. Beihefte zum Archiv für Schiffs- und Tropenhygiene, Pathologie und Therapie exotischer Krankheiten Band XXVII. Beiheft 2. Gegründet von C. Mensel. Paper Price 3.60 marks Pp 44 with 15 illustrations Leipzig Johann Ambrosius Barth 1933

This small monograph is a summary of studies of pellagra made by the author in Transcaucasia in 1931. It consists principally of epidemiologic and pathologic observations and a discussion of the different theories of etiology which, although adding little that is new, agree with the generally known facts and views concerning this disease. The excellent bibliography should be of value to students of pellagra.

Insects Man's Chief Competitors By W. P. Flint Chief Entomologist Illinois State Natural History Survey and C. L. Metcalf Professor of Entomology in the University of Illinois A Century of Progress Series Cloth Price \$1 Pp 133 with 12 illustrations Baltimore Williams & Wilkins Company [in Cooperation with the Century of Progress Exposition] 1932

This delightful little book recounts the ceaseless warfare between man and insects. To be familiar with all the different kinds of insects, a person must learn the names of 10,000 insects each year over a period of sixty years, while the numbers of each particular kind passes man's ability to estimate. Yet, in spite of these odds, man has learned to survive. The book tells what an insect is, describes the lives and habits of some of them and recounts the advances that man has made, especially in the last hundred years, in the battle against those which transmit disease or produce famine by destruction of food supplies.

Essentials of Prescription Writing By Cary Eggleston M.D. Assistant Professor of Clinical Medicine Cornell University Medical College New York City Fifth edition Cloth Price \$1.50 Pp 155 Philadelphia & London W. B. Saunders Company 1933

The fact that this volume has now seen the fifth edition should speak well of its popularity, which it well deserves as it gives the essentials of the prescribing of medicines in a condensed and convenient form.

Syllabus of Psychiatry A Guide to General Orientation By Leland E. Hinsie M.D. Professor of Clinical Psychiatry College of Physicians and Surgeons Columbia University With a foreword by Clarence O. Cheney M.D. Cloth Price \$2.50 Pp 348 Utica New York State Hospitals Press 1933

Beyond stating that this attempt at a general orientation is well done little in the way of review is practicable. Dr. Hinsie has summarized in a small volume the thoughts, theories and teachings of those whose influence on psychiatry today is of leading significance. They are grouped under chapters on constitutional concepts, psychic concepts, psychophysical concepts and sociological considerations with a final chapter on endogeny and exogeny. On page 332 the author says 'The principal purpose of this syllabus is to build up a new point of vantage from which one may survey psychiatric conditions from which one may gain a critical perspective of the several attitudes in order to see their relationships to one another.' Effort is made to render correlations between the various schools and to throw new light on the position of mental disorders in the field of medicine in general. The sociological chapter con-

tains a syllabus of lectures to social workers in which Freudian theory and interpretations are given with an apparent finality in conflict with the author's statement on pages 134 and 135 concerning such concepts that "no one feels at liberty at the present time to suggest that there is anything of a final nature to the conceptions that have been built around the psychiatric disorder." Definite bibliographic references are unfortunately not given. The book is a valuable supplement but not a substitute for textbooks in psychiatry.

Medicolegal

Malpractice Negligence in Interpreting Roentgenogram, Motives of Medical Witness May Be Considered

The plaintiff, while closing a hole in the fourth floor of a building, fell to the second floor. He was removed to a hospital and there attended by the defendant physician. A roentgenogram, taken by means of portable apparatus, was interpreted as showing that no bones were fractured. He remained in the hospital eight days, during which time no additional roentgenogram was made and no treatment was given other than rest and general care. On the eighth day he left the hospital with his physician's consent and with his assurance that no bones were broken. About three weeks after the accident, the injured man consulted other physicians. They found that he was suffering from fractures involving almost the entire structure of the left shoulder. In the end he lost permanently the use of his left arm. In a suit against the physician who attended him in the first instance he obtained a judgment for \$20,000. The physician appealed to the district court of appeals, first district, division I, California.

The expert witnesses for both sides agreed almost unanimously that the roentgenogram made at the hospital was not of the highest type in clarity and detail and that it would not be accepted as a basis for diagnosis by a physician of ordinary skill practicing in the community in which the patient was treated, but notwithstanding this, the evidence showed almost conclusively that it disclosed a fracture. The defendant-physician contended that the interpretation of a roentgenogram involves largely the opinion of the physician who interprets it and that a physician cannot be held accountable for an honest error of judgment. A physician, said the court in forming an opinion and acting on it, is presumed to have the ordinary skill and knowledge possessed by practitioners in his community. Moreover, the existence or nonexistence of things visible to the naked eye is not a matter of opinion. The evidence was sufficient, the court concluded, to warrant the finding by the jury that in making a diagnosis the defendant failed to use and exercise the required degree of care, skill and learning. The claim of the defendant that the roentgenogram on which he relied was clear and good, although lacking in detail, made his unskillfulness only more apparent. His contention that the roentgenogram was made solely to get a chest picture, to visualize the lung condition and to detect possible internal injuries, was regarded by the court as not in point, since the testimony showed that a roentgenogram taken as this one was would necessarily show the shoulder blade, which was fractured. The testimony showed, too, that in the exercise of ordinary skill and care physicians practicing in the community would have called for additional roentgenograms to enable them to determine the patient's condition.

The defendant urged that if the fracture had been discovered it would still have been a matter of personal judgment on his part whether he would or would not treat the patient as he did. This patient, said the court, was detained in the hospital partly to permit the better observation of developments and for further examination. The jury would have been justified, in the opinion of the court in finding that, if the fracture had been discovered, ordinary skill and care required that efforts be made to reduce it. A physician cannot be held liable for mere errors of judgment or for erroneous conclusions on matters of opinion, but he must use the judgment and form the opinions, not of a layman, but of one possessed of skill common to medical men practicing in the same or in a like community.

The fact that a physician has done his best is no answer to an action for malpractice.

Physicians who attended the plaintiff after he left the hospital, testifying for the defendant-physician, said that the plaintiff's condition was not aggravated by the delay in treatment that when the plaintiff came under their care there was no bony union and "the shoulders were in normal apposition" that they found the condition of the plaintiff in all respects the same that would have been present at the outset without aggravation or increased involvement of any sort. They attributed the wasting and loss of power of the shoulder muscles to injuries to the nerves that normally activate them, such injuries resulting directly from the fall and being unconnected with the fractures. Witnesses for the plaintiff, however, attributed the wasting and the loss of power in the shoulder muscles to the faulty union of the broken bones, with the resultant inability of the shoulder muscles to function. There was, said the court, a direct conflict in evidence and manifestly the jury adopted the views of the witnesses for the plaintiff.

The trial court told the jury that it might consider the demeanor of a witness, the reasonableness or unreasonableness of his testimony, his motives, if any, and his interest. Witnesses testifying for the defendant said the court of appeals, displayed a direct interest in the outcome of the case. One testified that he was unalterably opposed to malpractice cases, regardless of the facts. Almost all of them testified that they were acting without fee as a professional duty, to repel the inference that might arise against physicians as a class. Some of the medical witnesses had approached the plaintiff's witness and attempted to intimidate him or at least to dissuade him from testifying under pain of ostracism. Moreover, the physicians who found the nerve injury in the injured man made a report of their examination covering thirty pages or more but in that report they made no mention whatever of any nerve impairment. The same physicians began their treatment by putting the arm into a splint, to remove the bony structure from muscular interference, justifying the obvious inquiry as to what muscular interference could be expected from a muscle already dead. The appellate court could not say what weight the jury gave to the testimony of various witnesses but if the jury concluded that the medical experts were engaged in some sort of a united effort to pull the case out of the fire as a matter of professional pride or interest it would naturally discount their testimony to some extent.

The district court of appeals found itself unable to say that the amount of damages awarded was excessive and being unable to find error in the record affirmed the judgment of the trial court—*Reynolds v. Struble (Calif.)*, 18 P. (2d) 690.

Workmen's Compensation Acts Compensability of Dermatitis Due to Handling of Dyed Furs—The plaintiff, a saleslady, handled a shipment of low-priced dyed furs, "having a bad odor." Shortly thereafter a rash broke out on different parts of her body. Physicians who examined and treated her testified, in her proceeding for compensation under the workmen's compensation act of Michigan that in their opinion the irritation was caused by handling of the furs. The Supreme Court of Michigan affirmed an award of the department of labor and industry holding that the dermatitis constituted an accidental personal injury arising out of and in the course of the plaintiff's employment—*Sheiman v. H. H. H. Bros. Apparel Inc. (Mich.)* 247 N. W. 109.

Society Proceedings

COMING MEETINGS

Medical and Surgical Association of the Southwest	El Paso	Texas
Dec. 7-9	Dr. W. Warner Watkins	Box 1587 Phoenix Ariz.
Secretary		
Philippine Islands Medical Association	Manila	Dec. 12-15
S. Fernando	817 Taft Avenue	Manila
Secretary		
Society for the Study of Asthma and Allied Conditions	New York	
Dec. 9	Dr. W. C. Spain	116 East 53d Street New York
Secretary		
Southern Surgical Association	Hot Springs	Ark. Dec. 12-14
Robert L. Payne	142 York Street	Norfolk Va.
Secretary		
Western Surgical Association	Cincinnati	Dec. 8-9
Teachnor	306 East 12th Street	Kansas City Mo.
Secretary		

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

American Heart Journal, St. Louis

S 729 876 (Aug.) 1933

- Production of Anginal Syndrome by Induced General Anoxemia M A Rothschild and M Kissin New York —p 729
- Induced General Anoxemia Causing ST Deviation in Electrocardiogram M A Rothschild and M Kissin New York —p 745
- Angina Pectoris Plea for Greater Optimism in Prognosis T S Hart New York —p 755
- Arterial Hypertension and Arteriosclerosis Associated with Raynaud's Syndrome Soma Weiss and I B Ellis Boston —p 761
- *Circulation Time in Various Clinical Conditions Determined by the Use of Sodium Dehydrocholate L Tarr B S Oppenheimer and R V Sager New York —p 766
- Congenital Anomalies of Coronary Arteries Report of Unusual Case Associated with Cardiac Hypertrophy E F Bland P D White and J Garland Boston —p 787
- Anomalous Origin of Left Circumflex Coronary Artery W Antopol and M A Kugel New York —p 802
- Premature Beats Produced by Mechanical Stimulation of Exposed Human Heart J B Vander Veer Philadelphia —p 807
- *Relationship of Angina Pectoris to Aortic Valvular Disease L B Laplace Philadelphia —p 810
- *Prognosis in Gonococcal Endocarditis Review of Literature and Report of Case with Spontaneous Recovery A B Newman New York —p 821
- Rupture of the Aorta F C Narr and A H Wells Kansas City Mo —p 834
- Description of a Monaural Diaphragm Type of Stethoscope with Discussion of Its Special Field of Usefulness B Gordon Philadelphia —p 845
- Paroxysmal Ventricular Fibrillation in Relation to Quinidine Therapy Report of Case R F Escamilla Boston —p 850

Circulation Time and Sodium Dehydrocholate—Tarr and his associates outline a procedure for the determination of the velocity of the blood flow and the circulation time using sodium dehydrocholate. The test is usually performed in the morning, without breakfast and under resting conditions. The arm is held at the level of the auricles. The tourniquet is applied just before the injection. The patient is instructed that he will experience a transient bitter taste in the mouth and tongue and is to respond at once when he perceives it. The intravenous injection from 3 to 5 cc of a 20 per cent solution of sodium dehydrocholate (the faster the circulation time the less substance is needed to produce the taste), is made rapidly with an 18 gage needle and a 5 or 10 cc. syringe. The time at the start of the injection rather than at the conclusion is taken since the response may come with a minimum amount of the drug. The taste reaction persists for about ten to twenty seconds. The patient's attention can be distracted from any unpleasant feeling afterward by having him breathe deeply for half a minute. The average circulation time is thirteen seconds. The normal range is from ten to sixteen seconds. The authors determined the velocity of the blood in 140 adult patients with heart disease due to hypertension, arteriosclerosis, rheumatic fever or syphilis. There were forty patients in the group without cardiac failure. The circulation time in thirty of these was within normal limits. In the remaining ten the time was between seventeen and twenty-one seconds. There were 100 patients with signs of congestive heart failure. In ninety-six the circulation time was twenty seconds or more and ranged up to forty-seven seconds. In four the circulation time was less than twenty seconds. The velocity of the blood of a group of fifteen children with rheumatic heart disease was investigated. Their general behavior was similar to that of adults. Active rheumatic fever tended to increase the velocity of the blood in two of these children in whom congestive heart failure was present also. The velocity of the blood was determined in patients with congenital heart disease, subacute bacterial endocarditis, paroxysmal cardiac dyspnea, pericardial tumor, paroxysmal tachycardia and heart block. The authors state that caution must be exercised in interpreting the values for the circulation time in patients suspected of having heart failure in the presence of pulmonary emphysema or marked pulmonary fibrosis. Fever and anemia tend to increase the velocity of the flow of the blood. A slowing of the velocity of the blood was found in patients suffering from polycythemia or myxedema. The velocity of the blood was determined in seventy-eight patients with clinical manifestations of exophthalmic goiter. In sixty-eight patients who showed no evidence of heart failure the velocity of the blood was distinctly faster than normal, and in the ten with signs of cardiac failure the circulation time tended to be an arithmetical average of the two conditions.

Angina Pectoris and Aortic Valvular Disease—Laplace reviewed seventy-two cases of aortic valvular disease with especial reference to the relation between the incidence of angina pectoris and the height of the diastolic pressures. Angina pectoris occurred in 83 per cent of the cases in which the diastolic pressure was 80 mm of mercury or above, in 33.3 per cent of the cases in which it was between 79 and 40 mm and in 16.7 per cent of the cases in which it was below 40 mm. The fact that this syndrome did not occur most frequently in the latter group indicates that a low diastolic pressure is of relatively slight importance in the pathogenesis of angina pectoris. The author also studied the incidence of congestive failure but its increase at low diastolic levels was insufficient to account for the relatively greater decrease in the incidence of angina in the same group. These observations indicate that the appearance of angina pectoris in cases of aortic regurgitation cannot be attributed to an insufficiency of the coronary perfusion pressure during diastole. They support the view of Hochrein that the work of the heart is the most important factor in determining the volume of the coronary blood flow, that the myocardial circulation is relatively little affected by alterations in the diastolic pressure level and that cardiac systole does not significantly obstruct the coronary vessels.

Gonococcal Endocarditis—Newman reports a case of gonococcal endocarditis that developed in the course of a gonococcal bacteremia, following an induced abortion by tamponage and subsequently by curettage. This sepsis had run a chronic course of three and a half months preceding admission to the hospital. No valvular lesion was present on admission nor was there anything in the past history of the patient, by direct questioning or by symptomatology, to suggest antecedent valvular disease. During her stay in the hospital, which was markedly septic, an aortic and mitral insufficiency developed confirmed by fluoroscopic examination and by an increase of pulse pressure under observation. The septic course went into spontaneous remission four months after onset, the patient having developed peripheral embolic phenomena, a focal glomerulonephritis then went on to recovery and was discharged with an aortic and mitral insufficiency.

American Journal of Diseases of Children, Chicago

46 239-472 (Aug.) 1933

- *Lactic Acid of Spinal Fluid in Meningitis Practical Diagnostic and Prognostic Value A G De Sanctis J A Kilham and Teresa Garcia New York —p 239
- *Clinical Effectiveness of a Cod Liver Oil Concentrate D J Barnes Detroit —p 250
- Poliomyelitis Comparison Between Epidemic Peak and Harvest Peak J A Toomey and M H August Cleveland —p 262
- Preventing Loss of Weight in the New Born I N Kugelmass Ruth E L Berggren and Mildred Cummings New York —p 280
- Carbohydrate Metabolism I Effect of Previous Diet on Utilization of Glucose Injected Intravenously J A Johnston Detroit —p 309
- Atmospheric Conditions in the Small Canvas Tent (Guedel) Grace Rubin and J C M Bullowa New York —p 322
- The Moro Reflex in the New Born H V Sanford Chicago —p 337

Meningitis—De Sanctis and his associates investigated the sugar, lactic acid and cell count of the spinal fluid in various types of meningitis. The modification of Brehme and Brahdy of Clausen's method was used for the determination of lactic acid. Daily analyses of spinal fluid were made on a group of forty-four patients with meningitis throughout their stay in the hospital. The authors observed a rise in the lactic acid of the blood and of the spinal fluid in some cases of epilepsy, encephalitis, chorea and nephritic convulsions and in acute infections such as pneumonia and mastoiditis. In the conditions the

lactic acid of the spinal fluid is less than that of the blood and varies with that of the blood. In meningitis the lactic acid of the spinal fluid exceeds that of the blood and the authors believe that the increase in the latter is dependent on the increase observed in the spinal fluid. With clinical improvement the lactic acid of the spinal fluid approaches that of the blood. For the determination of pathologic states of the central nervous system, such as meningitis and abscess or tumor of the brain, a knowledge of the ratio of spinal fluid lactic acid over blood lactic acid is a practical diagnostic aid whenever this ratio exceeds 1. The fact that the lactic acid varies directly with the cell count supports the theory that the increased lactic acid of the spinal fluid in meningitis is a product of cellular metabolism. The authors further confirm this fact by their *in vitro* experiments on glycolysis in spinal fluid.

Cod Liver Oil Concentrate—Barnes divided forty-two rachitic infants into three groups of thirteen, fourteen and fifteen respectively, and gave them each day 6, 12 and 18 drops, respectively, of a corn oil solution of a cod liver oil concentrate of such a potency that they received, according to the groups, 4,000 units of vitamin D and 10,000 units of vitamin A, 8,000 units of vitamin D and 20,000 units of vitamin A, and 12,000 units of vitamin D and 30,000 units of vitamin A. Healing was rapid in all cases and was borne out by the return of the blood calcium and phosphorus to normal within an average period of two weeks or less and a rapid increase in strength and activity on the part of the child. Roentgenograms showed rapid calcification, and this roentgen evidence paralleled the improvement in the blood picture. The medication was well taken and caused no dietary disturbances. The healing was due to the cod liver oil concentrate and not to a loss of weight or a stationary weight, as is shown by the progressive gain of the children. That it was not due to the effect of the rays of the sun was evident by the fact that patients with active rickets who showed no healing were continuously coming to the clinic up to the time the experiment was concluded. This cod liver oil concentrate retains its active antirachitic effectiveness as measured in rat units of vitamin D, and in the dosage levels studied, is remarkably effective in curing rickets in infants.

American Journal of Medical Sciences, Philadelphia

186 157 312 (Aug.) 1933

- Modern Plan for Community Campaign Against Air Pollution H B Meller Pittsburgh—p 157
- Radiologic Recognition of Heart Disease in Pneumoconiosis J M Dyson Hazleton Pa—p 165
- Healing of Tuberculous Cavities Clinical Study B T McMahon and E H Kerper Icosmis N Y—p 170
- Incidence of Rheumatic Fever in New York City Hospitals J S Davis Jr New York—p 180
- Gastritis in Its Relation to Other Diseases T G Miller Philadelphia—p 192
- The Redundant Duodenum M Feldman Baltimore—p 198
- Correlation of Other Diagnostic Procedures with Cholecystography in Two Hundred and Fifty Cases of Suspected Gallbladder Disease I H Hitzrot Philadelphia—p 203
- Personality Type of Patients with Arterial Essential Hypertension D Ayman Boston—p 213
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- Renal Function in Persons with One Kidney L B Ellis and Soma Weiss Boston—p 242
- Nature of Splenic Characters in Banti's Splenohepatic Anemia and Method for Scoring Them Notes H Fox Philadelphia—p 248
- Determination of Nonpaternity by Means of Blood Groups with Especial Reference to Agglutinogens M and N of Landsteiner and Levine A S Wiener Brooklyn—p 257
- *Chemical Peculiarity of Pellagra Blood (Rapid Iodine Decolorization) Preliminary Note C H Campbell Oklahoma City—p 266
- *Maintenance of Normal Blood in Pernicious Anemia by Means of Intramuscular Injections of Solution of Liver Extract W P Murphy Boston—p 271
- Study of Lymphocytic Hemogram C Reich and Eleanor Reich New York—p 278

Phenolsulphonphthalein Test—Chapman and Halsted used the fractional method of estimating the elimination of phenolsulphonphthalein (15, 30, 60 and 120 minutes) in twenty normal subjects and a large number of patients with suspected renal disease. They found that in chronic interstitial nephritis the fractional test may show evidence of impaired renal function when the test, as usually done with hourly collections is interpreted as normal. This fractional test is quite as informative

as the urea clearance test and reflects the diminishing function in progressive kidney disease. Since it is easier to perform, it is the method of choice for routine clinical work.

Chemical Peculiarity of Pellagra Blood—About a year ago, Campbell noticed that the erythrocytes of pellagrous blood caused more rapid decolorization of iodine solutions than other human erythrocytes, whether normal or pathologic. After a series of experiments designed to test this observation he developed a technique that promises to be of value as a clinical laboratory test in the diagnosis of pellagra. The reagents used are a mixture of 3 volumes of 95 per cent ethyl alcohol and 4 volumes of ether and an accurately prepared compound solution of iodine. In preparing the color standards a 3 per cent potassium dichromate solution is made and from this the following dilutions should be made: 1, 5, 1, 10, 1, 20, 1, 40, 1, 80, 1, 120 and 1, 240. These standards are placed in a series of test tubes of the same internal diameter. The procedure is as follows: Samples of 5 cc of normal or nonpellagrous (control) and of suspected pellagrous venous blood are withdrawn and quickly introduced into 15 cc centrifuge tubes containing 3 cc of liquid petrolatum. The time of collection of each specimen must be recorded. As each sample is collected, the tube is stoppered and shaken until the blood is defibrinated. The specimens are then allowed to stand from thirty to forty-five minutes after which they are again shaken and centrifuged at 1,000 revolutions per minute for five minutes. When the tubes are removed from the centrifuge three distinct layers may be distinguished: an upper layer of fibrin and oil, a middle layer of serum and a lower layer of erythrocytes, leukocytes and the like (the erythrocytic layer). If any sample has not been properly defibrinated, clots will be present in the lower layer. Now 1 cc samples of the erythrocytic layers are transferred by means of serum pipets to test tubes of the same diameter as those of the standards. Exactly one hour after taking the venous blood specimen, 5 cc of the alcohol ether mixture is added to the corresponding erythrocytic sample, and the tube is stoppered tightly. After the alcohol ether mixture has been added to all samples, they are allowed to stand for approximately six hours at room temperature (from 25 to 30 C). At the end of this time a 0.1 cc portion of the iodine solution is added in rapid succession to each tube by means of an accurate micropipet. This is mixed gently and the stoppers are replaced. As the mixtures stand there will be noted a gradual diminution of color in each tube but a greater decolorization in the pellagrous samples. Within three hours the extract of pellagrous blood may be completely decolorized while other samples are not. The most constant difference occurs after the tubes have stood about twelve hours. At this time the colors of the alcohol ether extracts should be compared with the potassium dichromate standards. The color range of these standards represents that of most samples which have stood twelve hours. If the color of the unknown matched that of a standard two shades lighter than the nonpellagrous sample, a mild condition of pellagra was apparently indicated. If it compared with a standard three shades lighter than the normal, a moderately developed condition of pellagra was considered to be present. If the unknown compared with or was lighter than the fourth tube from the nonpellagrous or normal standard, advanced severe pellagra existed. The author reached these conclusions by a study of more than 150 hospital and dispensary cases, including a variety of diseases, fifty of which were pellagrous.

Normal Blood in Pernicious Anemia—Murphy observed that intramuscular injections of the solution of liver extract, given to patients in relapse or whose condition was unsatisfactory because of complications, instigated a remission in each instance, as is to be expected with treatment by means of the ingestion of liver or of an actively potent substitute. The beneficial effects of intramuscular injections occurred sooner and more strikingly than with peroral treatment. Maintenance treatment, carried out by the same means in eighty-one instances for sufficiently long periods of time to allow analysis of the amount of solution needed, shows that an intramuscular injection of the amount of solution derived from 100 Gm of liver (generally 3 cc), at intervals varying from one to six weeks, has maintained all these patients in a satisfactory state of

health with a normal condition of the blood. Improvement in the symptoms generally considered to accompany spinal or peripheral nerve damage has occurred regularly and often strikingly, and progression of these disturbances has not occurred in any patient after the blood condition has become essentially normal. Relapse has not occurred in any patient continuing under observation and treatment. The anemia diet, but not including liver, as previously suggested for the patient with pernicious anemia, has been advised in each instance and a course of large daily doses of iron (ferric ammonium citrate) has generally been prescribed at some time during the course of treatment, in order to allow the hemoglobin level to keep equal with the course of the rapid red blood cell formation. This has been of distinct benefit in improving the physical condition of the patient. It has been possible with the use of the intramuscular treatment to maintain this group of patients in a better state of health and with a more satisfactory condition of the blood than was possible by means of treatment by mouth, the prolonged treatment has been more economical to the patient, and this method of administration of liver substance has usually been better liked.

American Journal of Physical Therapy, Chicago

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- Significance of Early Recognition in Senile Fibrous Hypertrophy of Prostate G A Remington Chicago—p 5
- Colitis and Diet Therapy D E Lane—p 11
- Preventive Hydrotherapy L J Llewellyn Bridgend Wales—p 12
- Effects of Sinusoidal Stimuli on Gastric Acidity H Neffeld Brooklyn—p 16
- Why Coagulate the Tonsils? T G Atkinson Chicago—p 22
- The New Deal in Diet A E Gibson Los Angeles—p 27

American Journal of Surgery, New York

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- *Therapeutic Effect of Complete Thyroidectomy on Congestive Heart Failure and Angina Pectoris in Patients with No Clinical or Pathologic Evidence of Thyroid Toxicity II Operative Technic D D Berlin Boston—p 175
- Peptic Ulcer and Venofibrosis L Hauswirth A A Eisenberg and H Wallerstein New York—p 180
- Effect of Foods on Postoperative Distention Experimental Study J Fine and W S Levenson Boston—p 184
- Anatomophysiological Considerations in Treatment of Tuberculosis of the Spine F H Albee New York—p 204
- Psychoneuroses Secondary to Head Injuries M A Glaser and F N Anderson Los Angeles—p 210
- Fractures of Carpal Navicular and Triquetrum Bones J L Thompson New York—p 214
- Osteochondritis Deformans Juvenilis of Olecranon D S O'Connor New Haven Conn—p 227
- *New Method of Reducing Fractures of the Head of the Tibia Involving the Knee Joint C R G Forrester Chicago—p 230
- Chronic Appendicitis—Duodenal Ulcer V G Burden Philadelphia—p 235
- Gastrojejunal Ulcer in Childhood Report of Case J E Strode Honolulu T H—p 240
- Renocolic Fistulas V Vermooten and R M McKeown New Haven Conn—p 242
- Some Studies with Maximum Urea Clearance L L Hill Jr Montgomery Ala—p 247
- Newer Concepts on Physiopathology and Treatment of Thrombo Angitis Obliterans H M Rabinowitz Brooklyn—p 260
- Ovulation Menstruation and Hormones G J Hall Sacramento Calif—p 272
- Management of Abruptio Placentae S S Rosenfeld New York—p 279
- Antivenin in Thrombocytopenic Hemorrhage Importance of Bothropic Type K P A Taylor Havana Cuba—p 285
- Treatment of Acute Empyema Instrument for Closed Drainage M Tomaiuolo New York—p 289
- Report of Rare Congenital Malformation of Intestine Case Report R E Metcalfe San Francisco—p 294
- New Born Baby with Massive Umbilical Hernia C E Haines and J T McIlroy New Rochelle N Y—p 297

Effect of Thyroidectomy in Heart Disease—Berlin outlines a new method for the treatment of chronic heart disease which consists in the total ablation of the normal thyroid in patients without clinical or pathologic evidence of thyroid toxicity. The anterior surface of the exposed portion of the gland is searched for atypically located parathyroids. A pyramidal lobe is always sought for and if found entirely removed. If the condition of the patient warrants the gland is totally removed in continuity. A careful search of the entire gland is made for adherent or embedded parathyroids which if found are reimplanted in the sternomastoid muscle in accordance with the technique adopted by Lahey in the operation of partial thyroid-

ectomy. To avoid insult to the laryngeal nerves by the accumulation of serum or the formation of a hematoma, drainage is instituted. Drains are made to pass through the sternomastoid muscle on each side. The skin is closed with Michel clips and a firm sterile gauze dressing is applied. The author emphasizes the necessity for total ablation of the gland in order to insure a persistently lowered metabolic rate.

Method for Reducing Fractures of Head of Tibia—Forrester states that in fractures occurring in and about the knee joint and involving the head of the tibia, he waits from a week to ten days for the swelling to subside and then under a general anesthetic, reduces the displaced fragments with his reconstructed redresseur (straightening instrument) placing the fixed wooden button on the inside or normal area and by manipulation with the handle of the instrument, producing forcible yet steady pressure over the fractured area with the other button. Following reduction, it is noticeable that the application of the cast does not change the position of the reduced fragments, indicating that the logical time to do this is from a week to ten days after fracture, at which time the organized deposit about the fracture helps to hold it following reduction. Stockinet is applied from the toes to above the knee as high on the thigh as possible, and a Bohler cast is molded over the entire limb from the thigh to the toes. In from seven to ten days after reduction and application of the cast and as soon as the pain has subsided, the author applies his knee joint hinges. The patient is instructed to manipulate the splint by flexing the joint increasingly each day, beginning with a flexion of 5 degrees on the first day, increasing it to 10 or 15 degrees on the following day, and so on until full flexion has been obtained. The patient should be instructed to extend the knee fully at night and every night, because if this is not done there may form a bony deposit in the anterior chamber of the knee that will lock it and limit full extension.

Annals of Internal Medicine, Ann Arbor, Mich

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- Aspects of Carbohydrate and Fat Metabolism C H Best Toronto Canada—p 145
- Analysis of High Caloric Diets in Relation to Weight Changes J M Strang and A B Cox Pittsburgh—p 152
- The Rheumatic Lung C P Howard Montreal Canada—p 165
- *Treatment of Polycythemia Reticulocyte Response to Venesection Phenylhydrazine and Radiation E H Falconer San Francisco—p 172
- Polycythemia in Association with Pulmonary Disorders J J Waring and W B Yegge Denver—p 190
- *Standard Test for Measuring Variability of Blood Pressure Its Significance as an Index of Prehypertensive State E A Hines Jr and G E Brown Rochester Minn—p 209
- Diagnosis and Medical Treatment of Angina Pectoris P D White Boston—p 218
- *Experimental and Clinical Studies in Surgical Treatment of Angina Pectoris J C White, Boston—p 229
- Management of Edema C A Elliott Chicago—p 240
- Problems of Pulmonary Tuberculosis in General Practice R Fitz Boston—p 245
- Graphic Study of Changes in Muscular Activity of the Stomach Associated with Certain Epigastric Symptoms P B Welch Coral Gables Fla—p 251
- Relationship of Autonomic Nervous System to General Medicine I P Sprunt Baltimore—p 257

Treatment of Polycythemia—Falconer compared the results of venesection of the administration of phenylhydrazine hydrochloride by mouth and of irradiation over the spleen and the long bones in the treatment of polycythemia. The results indicate that venesection used as a means of reducing the red cells and hemoglobin in polycythemia, does not increase the reticulocyte count above normal limits. Irradiation over the spleen or the long bones in polycythemia does not stimulate the bone marrow as indicated by the reticulocyte count. Owing probably to its slow action in the reduction of the blood level the average daily reticulocyte count was lower than following venesection. In a patient with true polycythemia following the administration of 14 Gm of acetylphenylhydrazine the reticulocyte count rose promptly to 8 per cent and fell gradually to normal over a period of eighty two days. The study suggests that venesection may be a useful adjunct to phenylhydrazine treatment by permitting much smaller doses of this drug to be efficient in maintaining an approximately normal blood level.

Test for Measuring Variability of Blood Pressure—Hines and Brown outline a test for measuring the variability of

blood pressure, which consists in placing the subject in a recumbent position for fifteen minutes or until the blood pressure has attained or approximated the basal level. In cases of hypertension, as long as forty-five minutes may be required. With the cuff placed on one arm, the opposite hand is placed in ice water having a temperature of from 4 to 5 C., the blood pressure is taken at the end of thirty seconds and again at the end of sixty seconds. The hand is removed from the ice water and readings are taken every two minutes until the blood pressure returns to its previous basal level. The highest reading obtained is recorded as a measure of the response. Except for a small group of patients with hypertension the blood pressure returns to the basal level within two minutes after the hand is removed from the ice water. This reaction is independent of any significant changes in the pulse rate. There is a response in both the systolic and the diastolic pressures but somewhat less and more variable in the latter. It is likely that the response to cold has purely a neurogenic reflex basis because of the speed of the reaction, which is too rapid for the intervention of any known hormone or chemical factor. A tourniquet producing stasis of the flow of blood in the arm that is immersed fails to inhibit the reaction. The authors observed 230 subjects: 69 normal, 41 with diseases other than of the vascular type, 26 with localized forms of vascular disease, 76 with hypertension and 18 without hypertension who seemed to be normal, except that they gave abnormal reactions. There was evidence to indicate that certain persons have a constitutional or biologic abnormality leading to the development of essential hypertension. Demonstration of this potentiality should be possible theoretically years before the onset of the clinical degrees of high blood pressure. Subjects can be grouped as those with minimal and those with excessive responses of the systemic blood pressure to sensory and psychic stimulation. There is some evidence that the so-called normal persons who exhibit this hyperactivity will eventually suffer from hypertension unless development of this condition is forestalled. At least 98 per cent of all patients suffering from essential hypertension exhibit excessive reaction to local cold. Patients exhibiting other diseases have normal or minimal reactions. The cold test is useful in determining the efficacy of therapeutic measures to control the vasomotor irritability.

Surgical Treatment of Angina Pectoris—White is of the opinion that operations on the cervical sympathetic trunk even if they include the stellate ganglions cannot interrupt all the pathways of cardiac pain. The upper thoracic sympathetic ganglions or their communicating branches, or the posterior roots of the corresponding spinal nerves, are the logical points at which to interrupt painful stimuli from the heart. These anatomic and physiologic premises have been put to the test in thirty-two cases. In each case in which the author has been sure of a successful interruption of these structures angina pectoris has disappeared. Paravertebral alcohol injection is difficult technically because of the depth of the nerves and the small areas sclerosed by the alcohol. However, it is the safest method, and its results are far better than the old forms of cervical sympathectomy. The upper thoracic sympathetic ganglions have been resected in four cases with striking relief of pain on the operated side. However, the author believes that this is too severe an operation for the average patient suffering from angina pectoris and that the best surgical procedure consists of first attempting to block the thoracic sympathetic nerves with alcohol. The patients who fail to obtain satisfactory relief provided they are reasonably good surgical risks can finally be subjected to section of the posterior spinal roots.

Archives of Dermatology and Syphilology, Chicago

28 149 308 (Aug.) 1933

- Hydrogen Ion Concentration of Topical Preparations Commonly Employed in Dermatology. O. I. Levin and S. H. Silvers. New York—p. 149.
Effect of Iodides on Organic Iodine Reaction. H. J. Templeton and C. B. Andrews. Oakland, Calif.—p. 153.
Chancroid. Its Prevalence. Its Treatment with Specific Vaccines. V. Pardo-Castello. Havana, Cuba—p. 155.
Vital Reactions of Pulp of Teeth in Syphilis Produced by Induced Curants. Preliminary Report of One Hundred and Ten Cases. W. R. Peitz. Philadelphia—p. 163.
Erythema Caloricum Associated with a Remote Reaction to Heat (Neurodermatitis and Deshidrosis). Heat Allergy. H. Tannenholz. Detroit—p. 168.

- Dermatitis Caused by Ethyl Gasoline. D. W. Johnson. White Plains, N. Y.—p. 174.
Coccidioid Granuloma. Report of Case Originating in Western Texas. L. M. Smith. El Paso, Texas—p. 175.
Juvenile Elastoma. F. D. Weidman. Philadelphia. N. P. Anderson and S. Ayres, Jr. Los Angeles—p. 182.
Clinical Variants of Familiar Diseases of the Skin. Phenolphthalein Eruption. Pityriasis Rosea. Lichen Planus, Parapsoriasis. L. F. Weber and H. Rittner. Chicago—p. 190.
Joseph Jacob Plenk 1738-1807. J. E. Lane. New Haven, Conn.—p. 193.
Successful Treatment of Vitiligo. M. H. Cohen. York, Pa.—p. 213.
Blastomycetic Dermatitis by Lymphatic Extension. H. M. Robinson. Baltimore—p. 219.
Dermatitis of Eyelids Due to Rubber on an Eyelash Curler. E. C. Fox. Dallas, Texas—p. 222.
Ragweed Dermatitis. Report of Two Cases. Frances Pascher and Marion B. Sulzberger. New York—p. 223.

Chancroid—After having used the vaccine of Nicolle and Durand in his hospital service (more than 400 cases) and in a few private cases since 1927 with uniformly good results, Pardo-Castello concludes that vaccine therapy is indicated in all cases of bubo, phagedena and phimosis with inaccessible chancroids. In uncomplicated chancroid, local treatment by means of cauterization with pure phenol and dressings of iodoform powder is usually sufficient to bring about a rapid cure. In some cases electrodesiccation followed by iodoform dressings gives the best results. In the inflammatory cases with secondary infection, wet dressings of potassium permanganate or of copper sulphate 1:1,000 are indicated previous to cauterization. If the lesions fail to heal or if there is any tendency to spreading, vaccine therapy is indicated even in the absence of complications. Patients under treatment for chancroid should be kept ambulatory when possible.

Treatment of Vitiligo—In a case of leukoderma, Cohen instructed the patient to apply a 10 per cent alcoholic solution of oil of bergamot to all the affected areas twice a day. Ultra violet irradiation with the carbon arc lamp was applied to the face for from three to five minutes twice a week, and an intra venous injection of gold sodium thiosulphate (0.1 Gm.) was given once a week. Within two weeks the areas on the face had begun to coalesce. At each visit the hyperpigmented patches were seen encroaching on the depigmented spots, and in six weeks the face was completely free from any evidence of the disease. The patches on the thighs and abdomen were also lessened, but the improvement was not as rapid as it was on the face, which had received ultraviolet irradiation in addition to the oil of bergamot. The patient was treated for fourteen weeks, during which period she received a total of 14 Gm. of gold sodium thiosulphate. The other vitiliginous areas were treated by several ultraviolet irradiations with excellent results but the patient discontinued treatment after her face was freed from the disfigurement. She was seen one year after the last treatment, the vitiliginous areas had not returned. Her face was completely free from any pigmentary disfigurement, and the patches on the thighs and abdomen were greatly improved.

Archives of Otolaryngology, Chicago

18 145 268 (Aug.) 1933

- Objective Tinnitus Aurium. Report of Four Cases. S. Iglaier. Cincinnati—p. 145.
Tetany in Local Anesthesia. H. S. Wiedner. Philadelphia—p. 153.
Cholesteatoma Like Accumulations in External Auditory Meatus. Lois D. Greene. Chicago—p. 161.
Hemangio-Endothelioma of the Esophagus. Report of Case. A. C. Broders. P. P. Vinson and P. L. Davis. Rochester, Minn.—p. 168.
Mucocoele as Cause of Proptosis. Report of Six Cases. W. B. Chamberlain and T. L. Parry, Cleveland—p. 172.
Hyperesthetic Rhinitis. N. Fox and N. D. Fabricant, Chicago—p. 181.

Hemangio-Endothelioma of the Esophagus—Broders and his associates report a case of primary hemangio endothelioma of the esophagus in which the diagnosis was made during life. The patient was a woman aged 76, in whom six weeks before examination dysphagia and considerable substernal pain developed rather suddenly. Physical examination revealed nothing significant except that all the teeth were absent and dental plates were worn. Roentgenographic examination revealed an irregular obstruction in the lower part of the esophagus. Esophagosopic examination disclosed an infiltrating lesion invading the left anterior wall of the lower portion of the esophagus. The lumen of the esophagus was considerably reduced and a small amount of purulent secretion was observed.

exuding from the lesion, which contained a green-producing streptococcus when grown on blood agar plates. Microscopic examination of the tissue revealed an inflammatory process associated with colonies of an organism that appeared to be some form of *Streptothrix*. Esophagoscopy examination was made two days later and the tube, introduced into the lesion to a greater depth than before, encountered a foul necrotic mass. A number of small pieces of tissue removed for microscopic study presented the microscopic picture that was noted in those previously examined. The specimen contained the structure characteristic of hemangio-endothelioma. In a few areas of the specimen were groups of closely packed relatively small hyperchromatic round and oval neoplastic cells. For the most part however the specimen was made up of a network of small ill defined blood vessels and spaces lined with endothelial cells that were indistinguishable from those that were closely packed. The authors believe that the presence of these neoplastic vessels represents an attempt of the tumor cells to differentiate and therefore is an indication of lowering of the clinical malignant condition. Occasionally, mitotic figures appeared in both the solid and the vascular areas.

Archives of Surgery, Chicago

27 227 426 (Aug.) 1933

- Electric Shock. Presentation of Cases and Review of Literature. T. L. Pearl, San Francisco—p. 227.
Carcinoma of the Lip. Clinicopathologic Analysis of Seventy Seven Cases and Suggestion for Rational Plan of Treatment. O. R. Hyndman, Iowa City—p. 250.
Amputation Through Lower Third of Leg for Diabetic and Arteriosclerotic Gangrene. B. C. Smith, New York—p. 267.
Effect of Morphine on Movements of Small Intestine and Sphincter Muscles. T. G. Orr and H. E. Carlson, Kansas City, Kan.—p. 296.
Cancerphobia. Special Relation to Insignificant and Fancied Lesions of the Tongue. J. W. Spies, Peking, China—p. 306.
Prognosis in Carcinoma of Stomach. Remote Results of Surgical Treatment to January 1930. A. P. C. Ashhurst and J. W. Klopp, Philadelphia—p. 320.
Lymphatic Drainage of Joints. J. C. Kuhns, Boston—p. 345.
Wound of the Superior Vena Cava Treated by Suture. Report of Case. J. A. Bigger, Richmond, Va., and B. W. Wilkinson, Clarksburg, W. Va.—p. 392.
Clinical Consideration of Gastric Ulcer and Carcinoma. J. W. Hinton, New York—p. 395.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; L. D. Keyser, Knoxville, Va.; J. Verbrugge, Antwerp, Belgium; A. A. Kutzmann, Los Angeles; A. B. Hepler, Seattle; and R. Gutierrez, New York—p. 402.

Effect of Morphine on Intestine.—Orr and Carlson studied the effect of morphine sulphate on the movements of the jejunum in dogs by means of kymographic tracings taken with a balloon in thirty-Vella loops, through Ivy-Mann enterostomies of the upper jejunum and of the ileum through an ileostomy, and also its effect on the movements of the small intestine in human beings by means of tracings taken with a balloon through an ileostomy opening by observations of large hernias and by auscultation of both the normal and the pathologic abdomen. Morphine sulphate in ordinary doses gives an increase in tone, an increase in the amplitude of segmentation movements and an increase in the frequency and amplitude of peristaltic waves. Large doses stop peristalsis and decrease the tone but segmentation movements are little affected and may be somewhat increased. The duration of the effect of an average dose of morphine on the intestine is about six hours. This is true for both animals and man. Morphine stimulates the obstructed as well as the unobstructed intestine in animals as recorded by the kymograph and in man and animals as determined by auscultation. There appears to be no increase or decrease in response to morphine as death approaches. A single dose of morphine caused retention of the barium meal in the animal and in the human stomach. The emptying time was at least twice the normal. A marked delay in the emptying of the ileum in the dog was noted. Morphine evidently produces a spastic action on the sphincters which delays the progress of barium through the gastro-intestinal tract.

Lymphatic Drainage of Joints.—Kuhns attempted to find out the nature of the lymph canals of the joint in the lower extremity and their drainage and also the possible relationship of lymphatic drainage to arthritis. Injections of India ink were made directly into the joints of living young adult animals. Light ether anesthesia was given in order to prevent extravasation of the ink into periarthicular structures. From this

study the author concludes that lymphatic canals are present as abundant small vessels in the tissues lining joint cavities. They are most numerous just beneath the endothelial cell layer of the synovial membrane. The lymphatic drainage of the joints in the lower extremity is through the so-called deep lymphatic canals to the popliteal, deep femoral and iliac lymph nodes. Inflammation in the synovial tissues results in a decreased ability on the part of the lymphatic canals to absorb material larger than of molecular size. An apparent obliteration of the lymphatic vessels occurs when the inflammatory process is sufficiently severe or long continued. With the subsidence of the inflammatory reaction the lymphatic canals are again seen in their usual size and distribution and absorption of particulate substances by the lymphatic vessels is observed. Persistent inflammation in synovial tissues is dependent to a certain extent on the failure of the lymphatic vessels to function.

Suture in Wound of Vena Cava.—Bigger and Wilkinson report a case of wound of the superior vena cava treated by suture and state that, when such a vessel is injured outside the pericardium, the signs and symptoms are those of massive intrathoracic hemorrhage, whereas, if the intrapericardial portion is injured, cardiac tamponade is apt to result. No case of repair of such a wound can be found in the literature. Because of this fact and the importance of recognizing the possibility of such a wound so as to make an incision that will give adequate exposure the authors report their case.

Arkansas Medical Society Journal, Little Rock

30 59 76 (Aug.) 1933

- Importance of Roentgen Examination in Diagnosis of Diseases Within the Thorax. D. A. Rhinehart and W. E. Gray, Jr., Little Rock—p. 59.
Tragedies of Surgery. C. S. Holt, Fort Smith—p. 64.

Canadian Medical Association Journal, Montreal

29 113 226 (Aug.) 1933

- British Pioneers in Modern Treatment of Tuberculosis. H. Rolleston, Cambridge, England—p. 113.
Electrocardiographic Studies of the Dying Heart in Angina Pectoris. R. L. Hamilton and H. Robertson, Sayre, Pa.—p. 122.
Blood Pressure and Blood Vessels in Cerebral Arteriosclerosis. G. H. Stevenson and G. E. Hobbs, Whitby, Ont.—p. 125.
Agranulocytosis. G. Chown and A. S. Gelfand, Winnipeg, Manit.—p. 128.
Crimulomatous Myocarditis. J. Miller, Kingston, Ont.—p. 134.
Primary Sarcoma of the Intestine. F. D. Ackman, Montreal—p. 137.
Spontaneous Subarachnoid Hemorrhage. Report of Twelve Cases. H. H. Hyland, Toronto—p. 145.
Infant Care. J. H. M. Knox, Jr., Baltimore—p. 149.
Acute Appendicitis. Surgical Diagnosis. R. V. B. Shier, Toronto—p. 155.
The Future of Maternal Welfare. G. Fleming, Montreal—p. 158.
Spinal Anesthesia in Cesarean Section. K. M. Heard, Toronto—p. 164.
Cancer of Large Bowel. L. J. Carter, Brandon, Manit.—p. 167.
Oleothorax. Study of Twenty Five Cases at the Manitoba Sanatorium. A. M. E. L. Ross, Amette, Manit.—p. 171.
Acrodynia. S. English, Simcoe, Ont.—p. 174.

Electrocardiograms in Angina Pectoris.—Hamilton and Robertson present a case history and complete electrocardiographic observations of a patient during an attack of angina pectoris during the cessation of this attack and during a sudden and fatal second attack, the graph continuing through and after the patient's death. The diagnosis of angina pectoris was confirmed by necropsy. The cessation of the auricular function was noted early, changes then became evident in the ventricular complexes and the heart became extremely irritable, the patient finally dying of ventricular fibrillation. It was possible to hear the heart sounds with a stethoscope over the apex of the heart, for at least three minutes after the beginning of the ventricular fibrillation. A study of the electrocardiogram shows that cessation of the cardiac function is not simultaneous with clinical death but follows this. In comparing the process of the dying heart in this case with that of other reports the authors find that it is not identical in all cases. Cessation of function precedes chemical changes and until these changes take place it is possible by stimulation to get a return of cardiac function. This explains the beneficial effect of epinephrine injections after clinical death in a number of such cases reported. Clinical death does not coincide with chemical or physiologic death.

Oleothorax.—Ross gives a study of oleothorax based on twenty five cases. Indications for its use were persistent purulent

pleural effusion, ineffective or obliterative pneumothorax, mobile mediastinum and bronchopleural fistula. He considers olive oil less irritating and more absorbable than liquid petrolatum, especially in empyemas. Sensitiveness of the pleura should be tested at the beginning by small amounts of oil. In his series, 60 per cent gave no reaction. Thirteen of the patients were improved, nine were unimproved (one of the nine left the sanatorium and so discontinued treatment early), one became worse and two died. In seven, or 58 per cent, of the empyema cases there was improvement. The author's general impression is that pleurothorax is not an easy method of treatment to manage and requires careful observation and experience but is of distinct value in some cases. He has found that warming the oil to body temperature and using an 18 gauge needle and a 20 cc syringe works well. After each 20 cc of oil is injected an equal amount of air should be aspirated and the intrapleural pressure can be determined occasionally by the manometer. When underlying fluid is being aspirated the patient should be placed in the sitting position and the needle should be inserted low. The intrapleural pressure has to be watched.

Iowa State Medical Society Journal, Des Moines

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- Functions of Anterior Lobe of Hypophysis D. P. Barr St. Louis — p. 139
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Diagnosis and Management of Toxic Thyroid T. F. Thornton Waterloo — p. 446
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Journal of Biological Chemistry, Baltimore

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- Some Considerations on Precise Analysis of Air from Respiration Chambers F. M. Carpenter Boston — p. 595
Lipid Content of White Blood Cells in Normal Young Women F. M. Boyd Rochester, N. Y. — p. 623
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Carotene Content, Vitamin A Potency and Antioxidants of Butter Fat C. L. Shrewsbury and H. R. Kraybill Lafayette, Ind. — p. 701
Dipeptide Phosphoric Acid Isolated from Casein P. A. Levene and D. W. Hill New York — p. 711
Oxidation of Cystine in Nonaqueous Mediums. II. Studies on Hydrolysis of Acetonitrile and Acetic Anhydride by Nonaqueous Titration Method I. J. Irvine and G. Toennies Philadelphia — p. 727
Oxidation of Theloin and Some Theloid Derivatives D. W. MacCorquodale, L. Levin, S. A. Thayer and E. A. Doisy St. Louis — p. 733
Chemical Composition of Active Principle of Tuberculin XVII. Comparison of Nitrogen Partition Analyses of Proteins from Different Acid Fast Bacilli and Relationship to Biologic Activity Florence B. Seibert and Betty Mundy Chicago — p. 763
Chemistry of Lipids of Tubercle Bacilli XXXIV. Isolation of Pigment and of Anisic Acid from Acetone Soluble Fat of Human Tubercle Bacillus R. J. Anderson and M. S. Newman, New Haven, Conn. — p. 773
Relationship Between Gastric Secretion and Alkaline Tide in Urine R. S. Hubbard Buffalo, S. A. Munford Clifton Springs, N. Y. and J. Tyner Palmyra, N. Y. — p. 781

Journal of Pharmacology & Exper. Therap., Baltimore

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- *Determination of Toxicity of Neoarsphenamine I. Increase in Toxicity on Exposure to Air C. A. Morrell and C. W. Chapman Ottawa, Ont., Canada — p. 375
Id. II. Determination of Characteristic Curve for Rats C. A. Morrell and C. W. Chapman Ottawa, Ont., Canada — p. 391
Feverish Respiratory and Some Other Actions of Diminutophenol M. L. Tainter and W. C. Cutting, San Francisco — p. 410
Cumulative Poisoning by Squill Derivatives and by Ouabain E. W. Wallace and H. B. Van Dyke Chicago — p. 430
*Study of Antidotal Action of Sodium Thiosulphate and Dihydroxyacetone in Cyanide Poisoning, and the Alleged Antidotal Action of Glucose B. B. Turner and H. R. Hulpieu Indianapolis — p. 445
Phosphate-Buffered Injection Medium Disturbance in Caffeine Effects on Voluntary Muscle Response R. H. Cheney Brooklyn and Woods Hole, Mass. — p. 470
Toxicity and Deposition of Thallium in Certain Game Birds P. A. Shaw San Francisco — p. 478
Narcotic Potency in Paraldehyde Series P. K. Knoefel San Francisco — p. 488

Increase in Toxicity of Neoarsphenamine—Morrell and Chapman found that 4 per cent solutions of neoarsphenamine, standing exposed to air for twenty minutes, increase in toxicity as much as 56 per cent, calculated on the basis of solutions five

minutes old. Evidence is presented that the increase in toxicity of solutions caused by their preparation and an exposure of fifteen minutes to air is about 107 per cent, calculated on the basis of protected solutions. These increases in the toxicity of neoarsphenamine solutions can be prevented by preparing and keeping them under a layer of white liquid petrolatum. Neoarsphenamine solutions thus protected show no increase in toxicity after standing under oil for one hour, and there is some evidence that no increase in toxicity occurs in two and a half hours. There is a slight decrease in the toxicity of neoarsphenamine solutions kept under oil. This decrease remains constant and is insignificant when compared to large increases shown by unprotected solutions. The alterations in the toxicity of unprotected solutions make it impossible to obtain accurate or consistent results if they are used in toxicity tests. Protected solutions yield consistent and reliable results.

Cyanide Poisoning—Turner and Hulpieu state that the method of administering a poison in divided doses, each of which is sublethal but which are given rapidly enough to produce an accumulative effect, appears to be more satisfactory than the customary method of giving single lethal doses. Their results with sodium thiosulphate and dihydroxyacetone are in full agreement with those of a number of investigators. The authors were unable to confirm the observations of Forst and others in regard to the value of dextrose as an antidote for cyanide poisoning. Their results in this respect are in agreement with those of Hynd, Heymans and Soenen and of Rentz who were unable to demonstrate beneficial effects of dextrose. Their experiments with asphyxia induced by the use of a mask and the experiments in which the lactic acid was determined gave results that would be expected if the main action of cyanide is to depress cellular respiration. The fact that cells in a condition of oxygen want can secure energy by the breakdown of glycogen to lactic acid but are unable to reverse the process combined with the appearance of asphyxial convulsions which are almost always produced in cyanide poisoning accounts for the rapid rise in blood lactic acid. During recovery from oxygen want the cells again regain their ability to convert lactic acid to dextrose or to glycogen, and consequently the lactic acid of the blood rapidly falls to normal, while the dextrose in the blood is more slowly reconverted to glycogen.

Medical Journal and Record, New York

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- Posture in Its Relation to Industrial Fatigue J. R. Garner Atlanta, Ga. — p. 73
Bacillus Welchii Infection. Report of Three Cases D. B. Allman and H. Subin Atlantic City, N. J. — p. 77
Smallpox and Immunity J. A. Mendelson Tientsin, China — p. 80

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- Tuberculosis Control in New Haven H. R. Edwards New Haven, Conn. — p. 109
The General Practitioner and Diabetes Mellitus B. Jablons New York — p. 112
Posture in Its Relation to Industrial Fatigue J. R. Garner Atlanta, Ga. — p. 117

Nebraska State Medical Journal, Lincoln

18 281 320 (Aug.) 1933

- Management of Hepatic Disease C. A. Elliott Chicago — p. 281
Enemies of the General Practitioner L. F. Egan Hastings — p. 284
Statistical Study of Six Hundred and Sixteen Cases of Diabetes F. Conlin Omaha — p. 286
*Effort Thrombosis of Subclavian Vein in Puerperium L. S. McGoogan and E. E. Simmons Omaha — p. 289
Neurologic Problems in Traumatic Cerebral Lesions A. E. Bennett Omaha — p. 293
Comparative Study of Complications in Ether and Spinal Anesthesia L. E. Harnisch Omaha — p. 298
Burns and Their Treatment I. C. Munger Jr. Lincoln — p. 300
Interplay of Science and Practice in History of Modern Medicine C. M. Wilhelmj Omaha — p. 306
Treatment of Polymyositis. Review of Literature C. R. Spicer Hastings — p. 310

Effort Thrombosis—McGoogan and Simmons present a case of thrombosis of the veins of the upper extremity in a woman who had been well until her first pregnancy, following which she developed a chronic nephritis and was advised not to become pregnant. Six years later she became pregnant again and was admitted to the hospital one week before delivery during which time she was under intensive antitoxemic treat-

ment A classic cesarean section was performed under spinal anesthesia Salpingotomy was advised but refused She was delivered of a normal female child weighing 6 pounds (2,720 Gm) Her convalescence was uneventful except for a gradual fall of the blood pressure with diminution but not actual disappearance of the albuminuria On the day following her dismissal from the hospital, the fourteenth postoperative day, she noticed a feeling as if she were unable to swallow, then a swelling on the left side of the neck above the clavicle which spread to the left shoulder, accompanied by pain around the shoulder She then was unable to move her left arm, and the veins on the back of her left hand were distended There was discoloration and distention of the veins in the axilla, along the course of the long thoracic vessels, and some swelling and discoloration around the left shoulder The veins of the left upper extremity down to those over the dorsum of the hand were distended Palpation of the axilla was impossible because of pain The pulse was 146 and weak The heart sounds were similar to those heard in a case of pulmonary thrombosis The temperature was 99.6 F The swelling gradually descended down the left arm until the entire shoulder region arm, forearm and hand were edematous and cyanotic On the seventh day after the onset the pulse was slower and the patient felt better but she was unable to move the extremity The edema and cyanosis gradually disappeared and five weeks after the onset of the disturbance the patient was able to move the extremity somewhat and was allowed to get out of bed When she was up the edema and cyanosis returned to some degree and persisted for another month The cyanosis disappeared about this time but the swelling persisted for six months For the past ten months the patient has been able to do her own house work without difficulty The authors believe that thrombosis was due to the fact that the patient helped lift herself up in bed by holding on to the rods at the head of the bed Such a maneuver would of necessity entail abduction, extension and probably lateral rotation

Radiology, St Paul

21 105 206 (Aug) 1933

- Pulmonary Changes from Inhalation of Noxious Gases H P Doubt Detroit—p 105
Radium Implantation in Certain Growths of Hypopharynx D Quick New York—p 114
Advantages and Disadvantages of Large Chamber Measuring Apparatus A K Merchant Philadelphia—p 123
Roentgen Pelvimetry Description of Crid Method and Modification H Thoms New Haven Conn—p 125
*Roentgenography of Acute Bronchopulmonary Diphtheria in Adults N Toomey Palmyra Mo—p 130
Roentgen Stereoscopes Review of Its Present Status H A Jarre Detroit and O E W Teschendorf Cologne Germany—p 139
Priority in Therapeutic Use of X Rays E H Grubbe Chicago—p 156
Roentgenologic Significance of Filling of Ampulla of Vater J Friedenwild and M Feldman Baltimore—p 162
The Heart in Pulmonary Tuberculosis Roentgenologic Consideration E A Schmidt Denver—p 167
Pneumonoconiosis I Flinn Decatur Ill—p 173
Present Responsibilities in Dental Radiography C O Simpson St Louis—p 179
Nasal Accessory Sinus Diseases Clinically and Roentgenographically Correlated J W Dean St Louis—p 183
Treatment of Superficial Fungus Infections with Long Wavelength Roentgen Rays (Grenz Rays) Further Observations M Dorn and C White Chicago—p 185
Estimating Risk of Operations on Biliary Tract by Testing Excretory Function of the Liver E A Graham St Louis—p 191

Roentgen Pelvimetry—Thoms gives a modification of the grid method using the pelviscope which he describes. The eye of the examiner occupies the position of the target of the X-ray tube and views the developed roentgenogram through a glass centimeter grid placed in the position formerly occupied by the superior strait of the patient. The level of the superior strait for this latter purpose may be determined by means of the plumb bobs or entirely by calipers measuring from the sensitive film to the points of identification above. He places directly on the sensitive film identification marks (iron washers) which mark the center of the roentgenogram under the target the point under the symphysis which represents the point of contact of the lower arm of the calipers and the point under the posterior pelvic measurement which represents the point of contact of the lower arm of the calipers in this position. The eyepiece of the observer must be in the same hori-

zontal plane as the center of the developed plate in the viewing box. In other words, the conditions which obtain vertically in making the exposure are made horizontal for convenience. When the developed roentgenogram is viewed, it becomes possible to trace the course of the superior strait directly on the glass grid with a wax pencil, this tracing represents the true superior strait. It may then be traced directly on centimeter paper, which can be filed with the patient's chart. The author states that the pelviscope method has one advantage over the centimeter grid method in that a tracing of the superior strait in its true proportions becomes available.

Acute Bronchopulmonary Diphtheria—Toomey reports two cases of acute tracheobronchial diphtheria without laryngeal faucial or nasal symptoms. Both occurred in young adult males, one of the fatal fulminating type, and one of intermediate virulence, with recovery following the employment of antidiphtheritic serum only in large dosage intramuscularly and intravenously, and insulin and dextrose to support the heart. The obscure nature of the ailment, its rarity and the lack of common knowledge concerning it makes early diagnosis unlikely. A rapidly developing toxemia of insidious onset, with pallor, bronchial obstruction cyanosis or other symptoms of impending circulatory collapse should, especially in the presence of abnormal auscultatory signs over the chest, lead to pseudomembrane in the bronchi being sought for by direct smear, by expulsion (induced coughing) and by roentgenography despite the absence of inflammation or fibroplastic exudate in the fauces, nasopharynx or larynx. A large proportion of these cases will be recognized early by roentgenography rather than by cultural or bacterial inspection methods, owing to the negative aspect of the fauces, larynx and nasopharynx. The prognosis is grave virtually fatal for fulminating cases, but, for those of moderate virulence, the prognosis is better than for laryngeal diphtheria of like virulence, provided a correct diagnosis is established within three or four days of onset. A single massive dose of antidiphtheritic serum should be given immediately by intramuscular and intravenous injection, and the heart should be supported by absolute rest, insulin and suitable cardiac stimulants, both primarily and also during the period of delayed cardiac deterioration.

Rhode Island Medical Journal, Providence

16 113 128 (Aug) 1933

- Diabetic Coma A M Burgess Providence—p 113
Diet in the Treatment of Diabetes H A Lawson Providence—p 115
Insulin Its Use in Diabetes Mellitus L I Kramer Providence—p 117
Certified Milk H Moak Brooklyn—p 123

Science, New York

78 151 152 (Aug 18) 1933

- The University of California Botanical Garden Expedition to Western China and Tibet T H Goodspeed Berkeley Calif—p 144
*Sodium Tetrathionate and Methylene Blue in Cyanide and Carbon Monoxide Poisoning J H Draize Laramie Wyo—p 145
Occurrence of *Ixodes Auritulus Neum* in North America (Oregon) C B Philip Hamilton Montana—p 145
Protective Amputation of Limbs by *Stagmomantis Carolina* C C Guthrie Pittsburgh—p 146

Antidotes for Cyanide Poisoning—Draize states that according to results obtained in his laboratory, two of the various antidotes advocated to treat cyanide poisoning are effective. A dose of from 3 to 4 mg of a hydrocyanic acid solution per kilogram of body weight is fatal for the rabbit when administered orally. The intravenous injection of from 2 to 3 cc of a 2 per cent solution of sodium tetrathionate per kilogram of body weight is effective in saving rabbits having received orally three times the minimal lethal dose of hydrocyanic acid. The sodium tetrathionate solution is administered with the onset of the first symptoms of cyanide poisoning. Rabbits tolerate three times the therapeutic quantity of sodium tetrathionate without exhibiting any toxic effects. Methylene blue administered intravenously in the form of a 1 per cent aqueous solution does not afford as much protection. Rabbits receiving more than two times the minimal lethal dose could not be saved. The intravenous injection of quantities in excess of 25 cc of a 1 per cent solution of methylene blue was injurious to the rabbit. In the trial of sodium tetrathionate in

carbon monoxide poisoning, rabbits were gassed to a point from which recovery was impossible without treatment. Sodium tetrathionate was more effective than methylene blue in reviving the poisoned animals.

South Carolina Medical Assn Journal, Greenville

29 183 202 (Aug.) 1933

- Some Recent Concepts Concerning Essential Hypertension E. A. Hine Jr., Rochester, Minn.—p. 180
Recent Advances in X Rays as an Aid in Diagnosis F. D. Rodgers, Columbia—p. 191
Late Toxemia of Pregnancy: Analysis and Evaluation of Treatment R. A. Ross, Durham, N. C.—p. 19

Southwestern Medicine, Phoenix, Ariz

17 251 286 (Aug.) 1933

- Some Clinical Observations in Essential Hypertension J. B. Baldwin, Phoenix, Ariz.—p. 251
Chronic Tuberculous Vegetation S. H. James, Tucson, Ariz.—p. 255
*What Orris Powder May Do in the Labyrinth Storm H. W. Wendell, Phoenix, Ariz.—p. 257
Uteral Obstruction Due to Carcinoma of Uterus D. M. Davis, Phoenix, Ariz.—p. 259
Cardiac Infarct with Subsequent Congestive Heart Failure and Cystitis Case Report S. H. Newman, El Paso, Texas—p. 260
Splenomegaly Simulating Renal Disease Case Report K. D. Lynch and R. F. Thompson, El Paso, Texas—p. 261
Demonstration of Pathologic Specimen from Autopsy: Pneumonecrosis H. P. Mills, Phoenix, Ariz.—p. 262
Normal Delivery Following Cesarean Section: Report on Two Cases B. Herberg, Phoenix, Ariz.—p. 263
Advanced Pyelonephrosis from Large Renal Calculus Case Report K. D. Lynch and R. F. Thompson, El Paso, Texas—p. 264
Control of Communicable Diseases in Public Schools: Gertrude Shaw, Cragin, Tucson, Ariz.—p. 265

Orris Powder in Meniere's Disease—Wendell reports a case which, he believes, establishes the relationship of orris allergy as an etiologic factor in Meniere's disease. The patient has had periodic attacks of intense vertigo, tinnitus, nausea and vomiting for the past fourteen years. Headaches usually follow these attacks lasting for several hours. The attacks have been explored several times without relief. Family history is negative as to any suggestion of allergy. The patient gives a history of having had urticaria and hives. He states that attendance at theaters, dances and crowded places seems to provoke attacks. He states that he has never had a discharge from the ear. Roentgenograms show no pathologic changes in the sinuses or lungs. Sputum, Wassermann, genital, urinary, urine and blood tests were all normal. Intradermal and epidermal food tests were negative. House dust was plus two and orris root plus four. The author used 0.02 cc of a 1:500 dilution of orris. Severe headache, nausea and vomiting occurred, and the patient had to be placed in a reclining position to prevent falling. This condition lasted about six hours. The patient was given daily doses of weak solutions of orris until a tolerance for a 1:500 solution was established. He now can tolerate as much as 0.05 cc of 1:100 solution. He feels much improved physically and mentally and does not have the attacks when he attends shows or dances and when he visits barber shops. He has been taught the use of the extract and gives himself intradermal injections whenever he needs them.

Western J Surg, Obst & Gynecology, Portland, Ore

41 427 484 (Aug.) 1933

- Thyroid Deficiency, Commonly Unrecognized Disorder C. H. Mayo, Rochester, Minn.—p. 427
Iodine in Thyroid Gland W. O. Thompson, Phebe A. Thompson, Lois F. N. Dickie and S. G. Taylor III, Chicago—p. 431
Water Balance in Patients with Hyperthyroidism F. A. Collier and W. G. Maddock, Ann Arbor, Mich.—p. 438
Morphogeographic and Experimental Studies on Etiology of Goiter C. A. Hellwig, Wichita, Kan.—p. 453
Life Cycle of Thyroid Cell and Its Relation to Goiter B. Markowitz, Bloomington, Ill.—p. 463

West Virginia Medical Journal, Charleston

29 329 364 (Aug.) 1933

- Preventive Medicine from the Family Physician H. F. Vaughan, Detroit—p. 329
Otodynia: Diagnosis and Treatment R. S. Wolfe, Elkins—p. 340
The Hypothyroid Heart W. C. Swann, Huntington—p. 346
Intrathoracic Tumors M. I. Mendeloff, Charleston—p. 350
Acute Back Injuries T. T. Bagwell, Welch—p. 352
Trichomonas Infection of Kidney Pelvis Case A. C. Madsen, Elkins—p. 356

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

8 227 290 (Aug.) 1933

- Studies in Anemias of Infancy and Early Childhood Part VI Nutritional Anemia in Mother and Child A. V. Neale and J. C. Hawksley—p. 227
Id. Part VII Monocytic Reaction in Myelosis R. Gittins and J. C. Hawksley—p. 241
*Factors Causing Variation in Hemoglobin Level with Age in the First Year of Life Helen M. M. Mackay—p. 251
Renal Rickets Associated with Parathyroid Hyperplasia F. S. Latham and J. W. Orr—p. 265
Occurrence of Sex Linked Variations in Twins C. E. Kellett—p. 279

Variation in Hemoglobin Level—Mackay describes the usual variations in hemoglobin level during the first year of life relating to their causal factors. Some of the conclusions are tentative. The high hemoglobin level of the newborn infant is known to be related to the low oxygen tension of the blood of the fetus in utero and its consequent need of a relatively greater amount of hemoglobin. After birth there is a fairly rapid destruction of red cells, and the more fragile immature cells which are present in greater proportion in the blood of immature infants are destroyed early. Hence there is a rapid fall in hemoglobin in the first week of life, greater in small than in large infants. This destruction causes a further increase in blood bilirubin and may give rise to an icteric tinge of the skin (physiologic jaundice). During this stage of physiologic blood destruction the production of red cells is presumably decreased, as shown by the small number of reticulocytes in the blood of normal infants between the ages of 1 and 4 weeks. The drop in the red cells continues until about the third month of life. The evidence available again points to an increase in the production of red cells between the ages of 5 and 8 weeks though it does not usually exceed destruction till the third or fourth month. Iron derived from hemolysis of red cells in the early weeks of life augments the original store present in the liver and spleen at birth and is utilized during the period of a rising hemoglobin level, between the third and sixth months of life. This store, however, quickly becomes depleted especially in infants whose rate of growth has been rapid, and consequent iron deficiency often retards the rise and usually causes a slow drop in hemoglobin level after the sixth month of life. Toward the end of the first year of life, a slow spontaneous rise in hemoglobin level may again occur, resulting from increased iron intake due to a mixed diet.

British Journal of Physical Medicine, London

8 53 68 (Aug.) 1933

- Treatment of Lupus of Mucous Membrane by Artificial Sunlight E. Wesely—p. 55
*Ambulatory Treatment of Lupus by Light Diathermy and Diet S. C. Dalsgaard—p. 56
Diagnosis and Treatment of Secondary Intestinal Tuberculosis L. Brown and H. L. Sampson—p. 58
Therapeutic Uses of Alpine Climate B. Hudson—p. 62
Therapeutic Indications for the Kromayer Lamp E. Kromayer—p. 65

Treatment of Lupus—Dalsgaard describes an ambulatory treatment of lupus in which the patch is carefully cleansed with oil and ether to free it from all scales and crusts, so that the individual nodules and cicatrizations stand out clearly. Then follows a diathermy treatment, "spark painting." In this method the active electrode, a spatula about 3 mm wide (the patient holds the inactive one in his hand), is applied to the affected area so as to produce a shower of "microscopic" sparks between it and the electrode, giving the patch the appearance of having been painted with a diluted silver nitrate solution. When ulceration is present, the electrode is applied more deeply and the undermined margins in particular are carefully treated. This treatment can be borne by the patient without narcotics and anesthetics, and it should be repeated when the reaction following the previous treatment subsides and when the progress made can be gauged. On alternate days the author exposes the patient to the sun lamp at the shortest distance that can be borne painlessly. The first exposure is given immediately after the first diathermy treatment, which lasts for half an hour, this being increased to one hour at subsequent treatments. The affected part turns a flaming red immediately after this treat-

ment The sore is then bandaged and a neutral ointment applied The patient is instructed to take foods rich in vitamins and poor in animal albumin, two viosterol tablets and nine calcium tablets of 1 Gm each The viosterol may be replaced by cod liver oil

British Medical Journal, London

2 181 222 (July 29) 1933

- The Family Physician's Role in Prevention of Mental Disorder and Defect H R C Rutherford—p 188
- Viruses and Skin Diseases R T Braum—p 191
- Nasal Granulomas P Dempsey—p 194

Lancet, London

2 223 278 (July 29) 1933

- Work of the British Medical Association in Ireland T G Moorhead—p 223
- *Dermal Strain of Vaccinia Virus Grown on Chorio Allantoic Membrane of Chick Embryos Possible Large Scale Production of Bacteria Free Virus W D H Stevenson and G G Butler—p 228
- *Adolescent Hypertension with Excretion of Adrenalin Like Substance in the Urine Case J C Hoyle—p 230
- *Pathologic Diagnosis of Female Gonorrhea W N Mascall—p 233

Cultivation of Bacteria-Free Vaccinia Virus—In Stevenson and Butler's technic, fertile eggs are used after an incubation period of ten or eleven days The air sac is marked off and an area chosen and marked over what appears to be, by transmitted light the membrane of the embryo in such a position as to be well within the shadowed portion but yet away from the darkest area The egg is placed on a stand so that the air sac end is submerged in a water bath at from 38 to 40 C The shell over the chosen area is rubbed with alcohol and allowed to dry Disinfection of the shell with tincture of iodine can be carried out with safety All instruments are dipped in alcohol and flamed With the sharp point of scissors or scalpel a small hole is drilled in the shell, damage to the shell membrane being avoided If the shell membrane is not perforated during this procedure it is incised, but no attempt is made to damage the chorion by pricking in the manner advised by Woodruff and Goodpasture, for the authors found that death of the embryo may be caused in this way The inoculum is drawn up into a sterile fine capillary pipet and a column of about 1 to 1½ inches injected below the shell membrane obliquely on to the surface of the chorio allantoic membrane when often it may be noticed that the movements of the embryo actually suck in any of the inoculum that may be left at the margin of the hole The shell opening is closed with melted hard petrolatum—sterile and not too hot, and near to the point of solidification The eggs are dried marked with identification numbers and dates returned to the incubator, turned morning and evening and allowed to cool off every day for fifteen minutes Incubation is continued for four days, after which the eggs are opened the upper third to half of the egg toward the more pointed end is dipped in alcohol and flamed and the shell is opened aseptically in that area, the chorio-allantoic membrane is incised with scissors and the contents within that membrane may drop out or be drawn out with forceps leaving as a rule the chorio allantoic membrane attached within the shell from which it can be separated with ease So far as the authors experiments indicate and as Woodruff Goodpasture and Buddingh hoped a vaccine may be produced at little expense absolutely free from contaminating micro-organisms apparently capable of producing on the rabbit lesions comparable to those produced by calf vaccine and so far as observed non-hemorrhagic The chick membrane virus retains its potency at least two months in glycerin if kept below 0 C The experience of the authors is that, unless interfered with deliberately chicks usually hatch out from the inoculated eggs at maturity, and healthy chicks result Examination of the membranes left in some of the hatched egg shells show that the membranes really were infected—in some cases heavily so Actually, from twenty-one inoculated eggs permitted to mature twenty-one chicks have hatched out Two died subsequently but it should be noted that they were reared under necessarily artificial conditions This experience contrasts with the observations of Woodruff Goodpasture and Buddingh who state that infected chick embryos usually die on the fourth day after inoculation This may be due to the difference in the strains of virus employed—in the authors case dermal in their case neuro-

testicular They add that, when eggs are opened on the fourth day after inoculation, occasionally a dead embryo has been found, presumably as a result of the operation or from the infection, for example, out of forty-nine inoculated eggs that were opened, two contained dead embryos

Adolescent Hypertension—Hoyle describes a case of adolescent hypertension in which a pressor substance, related to epinephrine physiologically was excreted in the urine They suggest that the case may be an example of high blood pressure resulting from an acquired or inborn error of metabolism

Diagnosis of Female Gonorrhea—Mascall analyzes the results of investigations, performed on the first attendance of the patient in 500 consecutive cases of gonorrhea definitely diagnosed by means of (1) smears, (2) cultures, and (3) the gonococcus complement fixation test of the blood serum These methods were used as a routine and no case was labeled as gonorrhea unless or until pathologic tests proved the presence of the gonococcus, clinical observations alone were considered insufficient Cultures produced the highest number of positive results (66.8 per cent) The value of the gonococcus complement fixation test, as shown by this series is second (58.6 per cent positive results) but the corrected figure, 79.6 per cent when the latest technic is used, places this test first It has a definite place among the diagnostic methods of gonorrhea, but the clinical history and condition must be closely considered when the result of the reaction is being interpreted In many cases it is indispensable, as 142 cases (20.8 per cent) were discovered which otherwise would not have had their true nature revealed Smears alone, even when stained with Gram's stain give poor results (45.4 per cent), as no less than 54.6 per cent are overlooked This figure is even greater if methylene blue is the only stain employed Whenever possible the three methods should be combined The results from one method alone may not be dependable In gonococcal infections, errors in diagnosis may lead to such serious consequences both for the patient and for the medical attendant, and the underlying cause of the trouble is frequently so elusive that every possible method of diagnosis should be used that the proportion of mistakes may be reduced to a minimum

Medical Journal of Australia, Sydney

2 131 166 (July 29) 1933

- Pneumoconiosis W A Edwards—p 131
- Renal Pain and Nephropexy With or Without Re section of Renal Nerves M G Sutton—p 135
- Treatment of Carcinoma of Uterine Cervix R Fowler—p 144

Quarterly Journal of Medicine, Oxford

2 281 462 (July) 1933

- Diseases Associated with Pernicious Anemia Study of Three Hundred and Seventy Cases J F Wilkinson—p 281
- *Comparative Value of Drugs Used in Continuous Treatment of Angina Pectoris W Evans and C Hoyle—p 311
- Fatty Diarrhea with Especial Reference to Nitrogen Metabolism Two Cases A G Anderson and A Lvall—p 339
- Diabetes Mellitus and Pregnancy Clinical and Analytic Study with Especial Observations on Thirty Three Cases E Skipper—p 353
- *Effect of Yeast and Wheat Embryo in Anemias I Marmite Yeastman and Bernax in Megalocytic and Nutritional Hypochromic Anemias C C Ungley—p 381
- Xanthomatosis Generata Ossium I Snapper and C Parisel—p 407
- *Acid Base Equilibrium of Blood in Epilepsy F I McLaughlin and R H Hurst—p 419
- Achlorhydria T H Oliver and J F Wilkin on—p 431

Comparative Value of Drugs in Angina Pectoris—Evans and Hoyle observed a series of ninety patients with angina pectoris of effort over a period of two and a half years with especial reference to the comparative value of certain drugs used in continuous treatment Syphilitic angina pectoris was excluded and coronary thrombosis was considered only as a complication Each patient attended fortnightly, and the various drugs were administered over periods of from two to four weeks or longer In this way their effect on the frequency and severity of attacks could be compared As a control in each case a patient receiving placebo treatment was regularly substituted for an active drug The following drugs were tested sodium nitrite mannitol hexanitrate erythrol tetranitrate potassium iodide phenobarbital, chloral morphine papaverine, acetphenitidin theobromine sodiosalicylate theophylline ethylenediamine belladonna digitalis licarbol and harmol With one exception

the results show that a measure of improvement appears to result from every remedy tried, and at least as great an improvement as during placebo treatment. This universal efficacy can be explained only by natural variations in the severity of the symptoms, which give a spurious value to each remedy. There was some reason to think that chloral morphine, papaverine and acetphenetidin had a trifling influence in controlling the group incidence and severity of attacks. If, as the authors are convinced, none of these remedies are capable of lessening the frequency or severity of anginal attacks, there is all the greater need for a study of the application of those general measures known to control them and to promote the wider use of vasodilators, such as glyceryl trinitrate which are so often successful in the palliative treatment or even in the prevention of particular attacks.

Effect of Yeast and Wheat Embryo in Anemias — Ungley found that, in idiopathic hypochromic anemias with or without achlorhydria and whether or not the diet has been grossly defective, no effect on hemoglobin regeneration has followed the administration of massive doses of preparations of yeast or wheat germ. The experiments of Parsons suggest that yeast as well as iron may be indicated in the nutritional hypochromic anemias of pregnancy. In two patients with atypical pernicious anemia showing an incomplete defect in the secretion of hydrochloric acid combined with a gross dietary deficiency and associated in one case with dysphagia of the Plummer-Vinson type the administration of preparations of wheat germ and autolyzed yeast was followed by a hemato-poietic response. Of ten cases of classic pernicious anemia treated with preparations of yeast and wheat germ seven showed a response and three failed to respond. Wheat germ gave an uncertain positive result in one case and negative results in two others. Autolyzed yeast or an extract derived from autolyzed yeast gave positive results of a greater or lesser degree in six of seven cases. One patient who failed to respond to autolyzed yeast failed also to respond to dried brewers' yeast. In classic pernicious anemia and in two cases of atypical pernicious anemia, the responses were usually less in degree than those obtained from autolyzed yeast in certain megalocytic anemias without achlorhydria. From the therapeutic point of view, the variable and usually submaximal results obtained with doses as large as can be tolerated indicated that none of the preparations used are satisfactory substitutes for liver in the relapse stage of pernicious anemia. On the other hand, the responses so far obtained from a 65 per cent alcoholic extract of autolyzed yeast suggest that an inexpensive product suitable for the treatment of pernicious anemia may yet be obtained from yeast. The author discusses the possibility that preparations of yeast may owe their potency in pernicious anemia to (1) the extrinsic factor, (2) a breakdown product of the extrinsic factor perhaps resulting from the interaction of this substance with an enzyme liberated during the autolysis of yeast, or (3) a substance resembling the liver active principle.

Acid-Base Equilibrium of Blood in Epilepsy — McLaughlin and Hurst studied the acid-base equilibrium of the blood in epilepsy, estimating the measurements of the blood pH , the alkali reserve and lactic acid. The results suggest that in the interval period between fits 1. Variations in the alkali reserve and lactic acid are usually within normal limits but those of the pH extend to a range slightly above normal. 2. The average concentration of lactic acid is normal. The average alkali reserve and pH values tend to be slightly above normal. The averages of the results obtained for the alkali reserve and pH during the two-hour period preceding the fit show no significant difference from those of the interval period. Results obtained from samples of blood of individual patients before, during and after seizures lead to the following conclusions: 1. There is a fall in the alkali reserve during and for varying periods after the fit, this fall being accounted for by the accumulation of lactic acid in the blood. A decrease in the lactic acid during recovery is accompanied by an increase in the alkali reserve. 2. The blood pH falls during the fit, owing first to apnea during the tonic stage and then to the production of lactic acid during the clonic stage. Recovery to the normal pH is of more rapid occurrence than is the case with normal persons after exercise.

Archives des Maladies de l'Appareil Digestif, Paris 23 801 912 (Oct.) 1933

Complication of Gastro-Entero-Anastomosis Transitory Stenosis of Mouth of Anastomosis P. Henry and R. Peycelon — p. 801
Action of Insulin on Gastric Secretion J. Hofstein — p. 808
Elimination of Neutral Red by Gastric Mucosa Clinical Value of Method J. Held — p. 827

Elimination of Neutral Red by Gastric Mucosa — Held states that the chromoscopic test based on the power of the gastric mucosa to eliminate neutral red injected into the muscle has a great value in the differential diagnosis and prognosis of gastric lesions. On the basis of 160 chromoscopic tests ascertained with repeated examinations of the gastric contents after the caffeine test meal, he concludes that the normal gastric mucosa eliminates the dye in from twelve to twenty-five minutes after injection. In hyperchlorhydria the elimination is accelerated (from four to fourteen minutes), while in hypochlorhydria it is retarded (from twenty-six to forty minutes). Although elimination is more rapid in hyperchlorhydria and less rapid in hypochlorhydria, there is no parallelism between the degree of acidity and the speed of elimination of the dye. In elimination of the dye by the kidney is impeded owing to renal disease, there is a compensatory acceleration of the elimination by the gastric mucosa, independent of the gastric acidity. In gastritis the elimination of neutral red is retarded if the gastric acidity is normal. The quantity of mucus influences the retardation aside from any glandular lesion. The elimination of the dye is increased in gastric or duodenal ulcer as in other conditions evolving with hyperchlorhydria. The chromoscopic test is above all useful for the diagnosis of conditions of gastric hyposecretion: the elimination is greatly retarded or lacking in achlorhydria due to organic lesions of the gastric mucosa, while it is not affected in psychic achlorhydria. The chromoscopic test is superior to the histamine test for determining the secretory function of the gastric mucosa in achlorhydria. In cases in which neutral red is not eliminated the histamine test is likewise negative whereas occasionally when the histamine test is negative the mucosa retains the power of eliminating the dye. The injection of histamine simultaneously with neutral red hastens the elimination of the dye by the gastric mucosa, and in certain cases with a negative chromoscopic test it causes the dye to appear in the stomach: this represents the final effort of the gastric mucosa. The diagnosis of a permanent gastric lesion cannot be made after a single chromoscopic test: it requires periodically repeated tests. In eleven cases of cancer of the stomach the chromoscopic test was negative six times, mostly in cases in which the cancer was localized in the pyloric region; in cancer limited to the body of the stomach the power of eliminating the dye is often retained rather long. In doubtful cases, progressively deficient elimination of the dye favors cancer and increasing rapidity of elimination militates against it. In all cases of pernicious anemia there was total achylia and the chromoscopic test associated with histamine was negative, indicating atrophy of the gastric mucosa.

Presse Medicale, Paris

41 1497 1512 (Sept. 30) 1933

Iripomas of Tabum Majus H. Mondor and A. Sicard — p. 1497
Neuralgia of Pudendal Nerve J. A. Chavany, H. Welh and A. Chaignot — p. 1498
Santonin Test of Antitoxic Function of Liver A. Moukhtar and Hadidje Djévat — p. 1501

Santonin Test of Antitoxic Function of Liver — Moukhtar and Djévat test the antitoxic function of the liver by administering santonin and studying its elimination in the urine in the form of oxsantonin. The fasting patient is given 0.02 Gm. of santonin orally and thereafter the urine is collected every hour for nine hours. Three cubic centimeters of urine from each specimen is put in test tubes and to each is added 2 cc. of a solution of sodium hydroxide diluted with equal parts of water. This causes the oxsantonin, which is present in the urine and which is yellow, to turn red. Each tube is compared with a set of six graduated standards prepared with eosin. The preparation of the standards is described by the author. In normal persons the elimination of the oxsantonin starts at the end of one hour and increases progressively to attain its maximum toward the fourth hour. At this hour the concentra-

ion usually reaches the second or at most the third degree, the weakest concentration being represented by the first degree. Thereafter the concentration diminishes steadily to the seventh or ninth hour. In persons with hepatic disease the curve assumes different characteristic forms. Often the elimination attains its maximum more rapidly than normal and this concentration is maintained with slight oscillations for many hours (from nine to fourteen). In other cases the elimination of the oxy-santonin is irregular, after reaching a high concentration it drops suddenly to a low concentration, only to return again to a still higher degree than previously. These two modifications must be considered due to disturbances of the hepatic function. Retarded oxy-santonin elimination in patients with normal hepatic function occurs only in rare cases of retarded absorption of santonin. Weak or abundant elimination is not encountered in normal patients. The patient should drink a little water during the test, but not more than half a glass. In patients with nephritis this test is not always reliable. The authors have employed the test in 250 cases. Sometimes it was the only one that furnished a positive result in manifest hepatic disease. Repeated at intervals, it gives important prognostic indications.

Polichinco, Rome

40 1559 1598 (Oct. 2) 1933 Practical Section

- Frequency of Increase of Volume and Consistency of Prostate, of Inflammatory Nature in Patients with Diseases Due to Focal Infections. Bacteriologic Observation of Prostatic Fluid. F. Corbelli—p. 1559
Disinfection of Skin of Surgical Patients with Malachite Green. E. Fiorini—p. 1563
Ivory Vertebra. Case. M. Bottaliga—p. 1567
Fracture of Arch of Fifth Lumbar Vertebra with Syndrome of Cauda Equina. A. Tattoni—p. 1570
Triennium of Antidiphtheritic Vaccination in Infantile Population. G. Tosi and A. de Mitri—p. 1573

Disinfection of Skin with Malachite Green.—Fiorini tested the relative merits of malachite green as a disinfectant on the skin and in culture and found that it had a strong bactericidal effect. Since malachite green shows bactericidal power in a simple saturated aqueous solution, the disinfecting power of alcoholic solutions must be due to the aniline dye. Malachite green dissolved in high grade alcohol at a concentration equal to that of tincture of iodine has a disinfecting power slightly less than that of tincture of iodine. The bactericidal power of solutions of malachite green grows with the increase of concentration of the dye and, up to a certain limit, with the diminution of the grade of the alcohol. The solution of malachite green best adapted to the skin of surgical patients (greatest bactericidal power and least irritating action) has a concentration of not less than 10 per cent in 40 per cent alcohol. In all the author's patients, after disinfection with malachite green as well as with tincture of iodine, the isolated germs responded negatively to Dreyer's test and thus were not capable of causing suppuration. In preoperative disinfection with malachite green, the cicatrization of the wound is facilitated by the elimination of all irritative factors usually observed after application of tincture of iodine. In the disinfection of very sensitive parts, such as the external genitalia, a solution of malachite green with a low degree of alcohol prevents any disturbing irritation.

Rivista Italiana di Ginecologia, Bologna

15 351 445 (Aug.) 1933

- Quantity of Glycogen of Fetal Placenta and Liver in Normal and Pathologic Cases. G. T. Rio—p. 351
Indican of Blood in Tumors of Uterus and Ovary Previous to and After Operation. A. Salvini—p. 371
Etiology and Treatment of Late Hemorrhages During Confinement. M. Macciotta—p. 395
Importance of Constitutional Factor in Development of Striae of Pregnancy. F. Ponzi—p. 413
Function of Reticulo-Endothelial System in Puerperal Infections. G. Tata—p. 421
Quantitative Variations of Group Specific Properties Following Ether Anesthesia. L. Ponzi—p. 439

Indican of Blood in Tumors of Uterus and Ovary.—Salvini examined thirty-five patients, twenty-four of whom had fibromyomas of the uterus, ten ovarian cystic tumors and one both uterine fibromyoma and parovarian cyst. Examination of the urine of all patients previous to surgical intervention was constantly negative for indican. The author found that the rate of indicanuria increased after operation for tumors of the uterus and of the ovary. In hyperindicanemia much importance

has been attributed to a deficient renal excretory function even when clinical signs of renal disease were not manifest. Hyperindicanemia in uterine and ovarian tumors might be ascribed to a functional deficiency of the liver, particularly to a deficiency in the elaboration of glycuronic acid. The author maintains that a high degree of indican found before operation in the blood of patients having tumors of the uterus and of the ovary is due to insufficient renal function. He states that in these patients the higher amount of indican in the blood during the first few days after operation results from the renal insufficiency and from the intestinal paresis existing in all cases and tending to increase the putrefactive processes of the intestine. The examinations made during the last days of convalescence of the patients showed a steady diminution of the indicanemia. If it is admitted that hyperindicanemia in tumors of the uterus and ovary is due to renal functional insufficiency, it must also be acknowledged that, with the removal of the neoplasm, the influence exercised by it on the kidney ceases. In all cases the rate of indican steadily diminished after operation until it gradually disappeared. In determination of urinary indican the author always found normal values ranging from 10 to 20 mg per thousand cubic centimeters. The values of indicanemia never ran a parallel course in the sense that a hyperindicanemia corresponded to a hyperindicanuria. The author concludes that hyperindicanemia is indicative of deficient renal function and corresponds to a diminution in the amount of indican in the urine.

Brasil-Médico, Rio de Janeiro

36 635 652 (Sept. 9) 1933

- New Serologic Variety of Shigella Dysenteriae. A. de Assis—p. 635
Acute and Subacute Neuromyelitis. Case. A. Austregesilo—p. 640
Syphilis of the Sclera. Case. W. Belfort Mattos—p. 643

New Serologic Variety of Shigella Dysenteriae.—De Assis states that he isolated an organism with some of the characteristics of Shigella ambigua from a specimen of feces of a patient suffering from acute febrile dysentery. It was a gram-negative, rod shaped, nonmotile bacillus which acidified dextrose, produced indole and sulphuric acid, and was inactive in lactose and mannite. However, it did not cause agglutination of Shiga, Flexner-Hess, Kruse-Sonne and Schmitz typical dysenteric antisera. That the organism was not a nonagglutinant type of Shigella ambigua was proved by the fact that the blood serum of rabbits inoculated with it had a high agglutinating power for the respective antigen germ. A comparative study of the typical Shigella ambigua and the isolated bacillus gave the following results. The newly found organism invariably acidified without forming gas, galactose, sorbitol, rhamnose and glycerin, all of which are not made acid by Shigella ambigua. On the other hand, Shigella ambigua acidified adonitol and sucrose, which are not acidified by the new organism. When the new organism was added to bromo-cresol-purple milk it proved to be inactive, except for producing a slight initial acidification of the milk. When Shigella ambigua was added to the same milk there was an intense late alkalization. The new bacillus has been compared only with Shigella ambigua and not with other types of Shigella dysenteriae. However, the serologic differences of the organism are so marked that the author considers it a new and entirely independent subgroup of the Shigella ambigua group not previously reported. The author proposes to designate the new organism as the Cavambu variety of Shigella ambigua, because the feces from which the organism was isolated came from a woman who lived in Cavambu, Minas.

Dia Médico, Buenos Aires

6 149 168 (Sept. 11) 1933

- Volkman's Contracture Treated by Periarthral Sympathectomy. Case. A. F. Landivar and C. A. Leoni Iparraguirre—p. 151
Roentgen Image of Sylvian Aqueduct in Tumors of Cerebellopontile Angle. R. Carrillo—p. 158
Diathermocoagulation of Tonsils. J. M. Carbone—p. 161
Paraneurismatic Tuberculous Pleurisy. Case. R. Tardal—p. 163

Volkman's Contracture Treated by Periarthral Sympathectomy.—Landivar and Leoni Iparraguirre report the case of a woman aged 21 who suffered a fracture of the distal end of the radius of the right arm with the formation of a hematoma and total backward displacement of the radial epiphysis. Two

days later and while some attempts to reduce the fracture were being made, slight symptoms of Volkmann's contracture were observed. The consolidation of the fractured bone was obtained. Four months after the fracture had occurred, the patient showed a typical Volkmann contracture of the hands and fingers with retraction of the flexor and pronator muscles. All bloodless and orthopedic treatments failed. Humeral arteriectomy (for a length of 10 cm) was followed by the complete disappearance of the contracture. The patient obtained complete functional recovery, and the appearance of the hand and arm is now normal, two years after the operation.

Semana Medica, Buenos Aires

40 577 652 (Aug. 31) 1933 Partial Index

- *Ischemic Necrosis of Proximal Portion in Intracapsular Fracture of Neck of Femur. Case J. Arce and A. S. Introzzi—p. 577
- Metastatic Abscess of Lung in Nursing Case J. C. Navarro and F. A. Bourdet—p. 596
- Acute Amebic Enterocolitis in Children. Three Cases R. Cibils Aguirre and F. J. Sabido—p. 608
- Changes of Electrocardiogram Following Penetrating Wound of Heart P. Cossio, W. Tejerina, I. Othringham, M. Vega and J. Gonzalez Sabathic—p. 612
- Acute Idema of Lung in Pregnant Cardiac Women. Two Cases J. Buzan and M. Mordegha—p. 617
- Röntgenography of Uterus in Diagnosis of Causes of Metrorrhagia C. Heuser—p. 622
- Urethropic Fistula. Case R. Pini and C. Zerbin—p. 639

Necrosis in Intracapsular Fractures of Neck of Femur—Arce and Introzzi state that partial or total necrosis of the femoral epiphysis is a grave complication of transcervical and subcapital fractures. Early diagnosis and treatment of this complication are important to prevent the development of deforming arthropathy followed by invalidism. It is advisable to perform a roentgen examination of transcervical and subcapital fractures every two weeks after the fracture has been reduced and while the limb is immobilized in order to detect, as soon as possible, the appearance of necrosis. In necrosis the implantation of an apertosteal graft from the fibula into the neck, followed by a period of prolonged rest, gives satisfactory results. The period of rest should not be discontinued until the roentgen examination shows that restitution of the structure of the femoral epiphysis has taken place. In cases in which necrosis has advanced so far as to produce a grave arthropathy, Whitman's operation is indicated. This operation, however, should not be performed as long as the mobilization of calcium salts, characteristic of these pathologic conditions of the femur, is taking place. The myelosis observed in cases of necrosis complicating femoral fractures should not be considered to be caused by an irritating action of the graft on the bone but rather as a manifestation of intense disturbances of the local metabolism of nutrition of the bone involved. That the graft is not the cause of myelosis in these cases is proved by the fact that myelosis has been reported in various cases of the complication, whether a graft has been used or not and that similar myelotic changes appeared in certain points of the bone remote from the seat of the implantation in cases in which a graft was used. The authors report a case.

Archiv für klinische Chirurgie, Berlin

176 197 400 (Sept. 20) 1933

- *Experimental Studies on Influence of Partial Gastric Resection on Bacteriology and Chemistry of Small Intestine and Its Clinical Significance E. Hertel and T. Sartorius—p. 197
- *Role of Pyloric Glands in Secretion of Gastric Juice T. Straaten—p. 236
- *Delayed Blood Coagulability in Obstructive Jaundice A. Barlik—p. 252
- Symptomatology of Enterocystoma K. Kettel—p. 292
- Mechanical Causes of Stasis in Diseased Gallbladders O. Maier—p. 310
- Practical Significance and Indication for Bone Transplantation T. von Matolsky—p. 319
- Bone Sarcoma and Its Definition G. E. Konjetzny—p. 335
- Isolated Subcutaneous Rupture of Pancreas S. von Szacsat—p. 398

Effect of Gastric Resection on Bacteriology of Intestine—Hertel and Sartorius studied the bacterial content of the small intestine in dogs after partial gastric resection by means of fistulas performed at various levels. They observed in the upper and middle portions of the intestine a marked increase in the number of the bacteria as well as a qualitative change, namely, an invasion by the organisms from the large intestine.

The change in the bacterial count seemed to depend to a certain extent on the nature of the nourishment and the acid phase of secretion produced by it. The authors made determinations of indole and of iodine binding aromatic products of decomposition and of acids. Constant differences, as compared with normal control animals, were obtained with indole determinations and to a less extent with indican, which seemed to run a parallel course with the former. An exclusive meat diet gave the highest indole content, especially after the second Billroth method of resection. A diet of milk, whey and especially that of sour milk produced insignificant amounts of indole. An attempt was made to correlate these observations with post-operative disturbances after a partial gastric resection such as dyspepsia, enteritis, anemia and the effect on the general state. Fermentation tests with chyme showed that even in the upper segments of the intestine there developed fermentative processes and decomposition of the character one sees in dyspepsia. This condition may cause an enteritis, which in its turn may cause auto-intoxication. The postoperative digestive disturbances may lead to secondary and even to pernicious anemia. The mild neurasthenic disturbances observed after resections have their foundation in organic alterations.

Pyloric Glands and Secretion of Gastric Juice—Straaten states that in his experiments sham feedings failed to evoke high acid values in dogs with esophageal fistula when the segment of the stomach containing the pyloric glands was resected. When the pylorus was left but the rest of the stomach containing pyloric glands was removed, low acid values resulted from sham feedings. After a considerable time, however, high acidity could be provoked by sham feedings. It was only after a considerable lapse of time after the resection that sham feedings were capable of inducing low acid values when the pylorus and the portion containing pyloric glands were resected. The author concludes that the so-called first or psychic phase of gastric secretion is capable of producing high acid values only when some of the pyloric glands have been retained. He further concludes that the gastric segment containing the pyloric glands is capable of stimulating gastric secretion not only through mechanical and chemical stimuli, as formerly believed, but through psychic influences as well. The latter is a reflex phenomenon resulting in the secretion of a hormone which is transported by the blood to the fundal glands. These experiments justify partial gastric resection as therapy for the peptic ulcer especially if one accepts the role of the psychic secretion in the genesis of the ulcer.

Delayed Blood Coagulability in Obstructive Jaundice—Barlik ligated the common bile duct in rabbits and found that this was followed in a few days by jaundice and delayed blood clotting. The plasma of such an animal was found to possess antithrombin, antiprotrombin and anticomplement properties. Cholemic serum when heated to 56°C was found to possess greater antithrombin property than similarly treated normal serum. At 70°C this antiprotrombin property was lost. The activity of prothrombin was found to be delayed in cholemic plasma. The author was able to increase the coagulability of the cholemic blood and plasma by acidifying the blood, through addition of chloroform or of carbon dioxide. He concludes that delayed blood clotting in experimental obstructive jaundice is due to increase in the blood content of antiprotrombin.

Deutsche medizinische Wochenschrift, Leipzig

59 1419 1452 (Sept. 15) 1933

- Saprophytes of Milk and Their Significance G. Bessau—p. 1419
- Additions K. Schneider—p. 1423
- Intracapsular Extraction of Senile Cataract A. Elschning—p. 1426
- Idem W. Stock—p. 1427
- *Tolerance for Ascorbin Acid (Crystallized Vitamin C) During Nursing Age E. Kramm—p. 1428
- *Allergic Manifestations Produced by Stimulants Their Treatment M. J. Gutmann—p. 1429
- Basic Experience of Physician V. von Weizsäcker—p. 1431
- Fatality After Smallpox Vaccination F. Wernick—p. 1434
- Therapy of Whooping Cough M. Stumadel—p. 1434
- Crisis in Therapy of Tuberculosis Bochall—p. 1435
- Idem E. Brieger—p. 1436

Tolerance of Nurslings for Crystallized Vitamin C—After calling attention to the great significance of vitamin C in the feeding of nurslings, Kramm shows that normal nurslings

usually tolerate fruit juices well enough so that they receive sufficient amounts of vitamin C. In certain nutritional disturbances, however, the adequate provision with vitamin C is often difficult, and for this reason the author welcomes the fact that vitamin C is obtainable in pure form. He studied the efficacy of the pure vitamin in healthy and sick nurslings and in premature infants. He found that healthy nurslings tolerate from 25 to 50 mg daily, that new-born infants tolerate from 20 to 25 mg, and that premature infants can safely be given 15 mg. Febrile disturbances do not seem to inhibit the tolerance for the pure vitamin. Moreover, medication with the vitamin causes no gastro intestinal disturbances, and after this had been determined the vitamin was administered to nurslings with intestinal disturbances. The author gained the impression that the vitamin had a favorable influence on the development of premature infants and also that it played a significant part in the water metabolism.

Allergic Manifestations Caused by Coffee—Gutmann discusses the allergic manifestations caused by coffee. He describes the various methods of preparing coffee and estimates the caffeine contents of the different coffee extracts. He points out that, although small doses of pure caffeine produce palpitation of the heart, tremor, sweating, anxiety, nausea and diarrhea, coffee, or several cups of tea or of cocoa with a comparatively higher caffeine content and with theobromine, may be well tolerated. He ascribes this to the fact that in different stimulants the various xanthines are combined with different chemical substances. Caffeine for instance is combined with the tannic acid of coffee, which under the influence of hot water is split into caffeic acid and quinic acid. Moreover, the stimulating action of coffee is not solely dependent on the caffeine but also on the roasting products, which present a mixture of various chemical substances, such as furfural, pyridine and ammonia and also coffee oil, which is supposed to be the carrier of the aroma. In discussing the allergic action of coffee, the author differentiates susceptibility to caffeine from susceptibility to coffee as such. Allergic manifestations that develop after drinking coffee are itching, neurodermatitis, urticaria, Quincke's edema with particular involvement of the face, intestinal spasms with chronic constipation or, in other patients, diarrhea, also rhinitis, asthmatic disturbances, biliary colics and migraine. The author tested various types of coffee on persons who responded with such allergic manifestations. The coffee that was tolerated by the greatest number of "coffee susceptible" persons was one from which many roasting products, such as aldehyde, furfural, methyl alcohol, acetone, acetic acid, pyridine and ammonia, had been removed, while most of the aromatic substances had been retained. In the case of this coffee the greater tolerability is the result of the reduction of allergens, however, the better tolerance for caffeine-free coffee compared to ordinary coffee, which is likewise noticeable in many allergic persons, is ascribable to the fact that caffeine makes the patient more susceptible to allergic influences.

Deutsche Zeitschrift für Chirurgie, Berlin

241 313 504 (Sept 25) 1933 Partial Index

- Results and Experiences with Five Hundred Blood Transfusions F Schürer-Waldheim —p 332
Circoid Aneurysm H Hohbach —p 349
Origin and Treatment of Adhesive Pericarditis H W Pissler —p 359
Pathogenesis, Symptoms and Treatment of Pylorospasm of Nurslings P Boecker —p 377
Indications for and Results with Ileostomy After Witzel A Schmechel —p 391
Lymphohistiocytic Skin Reaction of Kauffmann in Acute Appendicitis E Seifer —p 410
Osteodystrophia Fibrosa Localisata of Long Tubular Bones H Bremer and B Wierent —p 418
Tear Fractures of Bones of Wrist M Ernst and W Rommelt —p 435
Surgical Treatment of Hallux Valgus H C Ullmann —p 452
Roentgenologic Recognition of Fracture of Vertebral Arch E von Oettingen —p 470

Results with Blood Transfusions—Schürer-Waldheim states that in the Graz clinic more than 500 blood transfusions were performed in the last four years with two fatal results due to faulty grouping of the donor. The method of selecting professional donors in their clinic included a general physical examination with particular attention to syphilis, malaria and gonorrhea. A Wassermann blood test was made every six weeks. To prevent fraud each certificate of health was accom-

panied by the photograph of the donor. The grouping is repeated before the transfusion. The donors are reexamined every six weeks and are not used oftener than once during that period. Some of the donors were used as often as twenty-five times without any harm to them. Blood grouping by means of the "hemotest" was not infallible and for that reason Oehlecker's biologic test was carried out at every transfusion. Blood transfusions proved strikingly effective in the control of acute hemorrhage of capillary or parenchymatous nature. Surgical intervention is necessary when bleeding comes from fairly large arteries. Spontaneous hemorrhage into the intestine, the genito urinary tract or the pulmonary tissue was effectively arrested by transfusions. In hemophiliac patients, blood transfusion combined with hypodermic injections of sodium citrate had a favorable effect on the control of bleeding. Encouraging results were obtained by the use of massive and repeated transfusions in the treatment of the tendency to bleeding in patients having long standing icterus. In chronic anemia resulting from repeated hemorrhages, transfusions of smaller amounts of from 200 to 300 cc of blood favorably influenced the blood picture and the stypic properties of the blood. The cachectic state of patients with a malignant condition was favorably influenced by blood transfusions without, however, any effect on the rate of growth of the tumor. Transfusion was effective in combating postoperative shock, provided other and undetected causes did not operate at the same time, such as edema of the brain tissue, fat or air embolism, or a bleeding vessel. The method is applicable with good results in delayed convalescence, provided the function of the kidneys is unimpaired. Blood transfusion is absolutely contraindicated if the function of the kidneys is impaired. The results in suppurative conditions were not encouraging, but they can perhaps be improved by earlier, massive and repeated transfusions. Good results were observed in burns, and only transient improvement in diseases of the blood.

Pylorospasm of Nurslings—According to Boecker, the older anatomic concept of the so-called pyloric hypertrophic stenosis of infants was based chiefly on postmortem evidence. The pyloric tumor was found to be the result of hypertrophy of the circular fibers of the pyloric musculature, the longitudinal fibers remaining unchanged. The newer functional concept regards the condition as a pylorospasm developing on a neurogenic basis. This concept finds support in observations made in the course of operations on these infants. It was noted that the tumor corresponded not to the pyloric but to the antral portion of the stomach. It was, in fact, a prepyloric tumor. The author points to the experience of Lehman, who found that in 10 per cent of the infants with a palpable tumor no tumor was found at the operation. Instead there existed a spasm involving the pyloric and antral portions. This condition termed by Hurst "achalasia," is a functional disturbance in the coordination of the opening mechanism of the pyloric sphincter. For this reason, in Sauerbruch's clinic, these infants are first treated medically in the pediatric clinic. Those who do not respond are turned over to the surgical division. Fifty children were operated on for pylorospasm between 1926 and 1932. Of these, forty-six were boys and four girls. The mortality was 8 per cent. The author attributes these good results to the simplicity and effectiveness of the Weber-Ramstedt operation.

Osteodystrophia Fibrosa Localisata of Long Bones—Bremer and Wierent report seven cases of localized fibrous osteodystrophy observed in the Cologne surgical clinic between 1920 and 1931. The patients were observed for periods of from one and a half to twelve years. The theory of a single gross injury appeared untenable but the possibility of oft repeated insignificant injuries as an etiologic factor appeared likely. The condition first manifested itself almost invariably through a spontaneous fracture. The patients came to be treated at the ages of from 6 to 16 years. The order of frequency of localization was humerus, femur and tibia. The disease pursued the following course in their patients. In only one was there an involvement of the epiphysis with disturbance of longitudinal growth of the bone; in one the cyst enlarged as the bone grew; in two spontaneous fracture terminated in healing; in two spontaneous fracture was not followed by deposition of callus.

and in two, healing of the spontaneous fracture was followed by two later fractures. The treatment consists in curetting the cyst cavity. It is impossible to explain why in some cases spontaneous fracture leads to thickening of the bone and healing, while in others thickening does not occur and an operation becomes necessary to obtain healing. The authors likewise report two cases of cyst formation in the distal end of the tibia in which the process, after a number of years, broke through the cortex and involved the soft parts and the skin with a resulting large area of ulceration. One of these patients died of metastases one year after amputation of the leg.

Jahrbuch für Kinderheilkunde, Berlin

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*Clinical Aspects and Etiology of Subcutaneous Adiponecrosis (Scleroderma Infantum) S. A. Sive—p. 1

*Treatment of Diabetes in Children M. Weichsel—p. 25
Experiences with Intubation in Nondiphtheritic Stenoses M. Hohlstedt—p. 42

The Integrated Child: Increased Sensitivity of Sympathetic Nervous System to Psychic Stimuli S. Ederer and J. König—p. 46

Subcutaneous Adiponecrosis—Sive shows that adiponecrosis is a process strictly limited to the fat tissues and having no influence on the general condition of the organism. He gained the impression that its development is dependent on a high palmitic acid content of the fat, but he admits that trauma (pressure during birth) may be a contributing factor. The importance of the palmitic acid content of the fat is further proved by the fact that when adiponecrosis occurred in adults, the same composition of the fat was found. The author accepts the cellular changes in the tissue as reactions to the altered form and composition of the fat. He shows that the appearance of adiponecrosis in foci contradicts the palmitic acid theory only apparently, because the fat cells are hardly all at the same time in the same stage of development and probably do not have the same composition everywhere.

Treatment of Diabetes in Children—Weichsel tested the efficacy of various dietary treatments recommended for children with diabetes mellitus. He found that a diet with high carbohydrate content, when given for longer periods, may impair the tolerance in cases of medium severity. The protein carbohydrate system proved ineffective even when given only for a short time. A fat and carbohydrate diet of short duration proved favorable. In children, however, this diet (free from animal protein) can be employed only for a short time. Stolte's free diet proved inadvisable in incipient cases, but the author thinks that it can be tried in cases of medium severity. In the so-called total diabetes the free diet proved helpful in some, ineffective in other cases. The author recommends as the method of choice a diet in which the food essentials appear approximately in the ratio in which they appear in human milk. In older children the composition may be changed by increasing the fats and by decreasing the carbohydrates.

Klinische Wochenschrift, Berlin

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*New Rapid Pregnancy Reaction from Urine (Thirty Hour Reaction) W. Reiprich—p. 1441

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New Observations on Occurrence of Imidazol Derivatives in Urine O. Furch and E. H. Majer—p. 1454

*New Gonococcic Antigen E. Witebsky—p. 1455
Serious Silicosis L. Teleky—p. 1456

New Rapid Pregnancy Reaction—The so-called thirty hour reaction described by Reiprich employs morning urine, because it contains the hormone in the most concentrated form. Following filtration and the addition of a drop of tricresol the urine is injected under the skin of the back of infantile or

juvenile rats weighing from 40 to 50 Gm. Rats of this weight tolerate from 10 to 14 cc of urine in the course of six or more hours, while smaller rats may die of lesser doses. As a rule, the urine is injected in two or three doses at intervals of about six (or six and three) hours. The positive reaction, which is evident thirty hours after the first injection, consists in hyperemia and enlargement of the ovaries to two or three times their normal size. The ovaries of the control animal that is given injections of urine from a nonpregnant woman remain pale and small. The reaction does not require microscopy, as it can be detected with the naked eye. However, the histologic studies that were made to determine the nature of the changes disclosed (1) intense blood perfusion of the tissues and dilatation of the vessels, (2) accelerated growth of the otherwise still small or medium sized follicles, and (3) a beginning luteinization. The author says that an accident led him to try the rat as a test animal, because in the course of experiments for other purposes he discovered the great resistance of the rat to comparatively large amounts of urine and decided to utilize this property for the pregnancy test.

Dehydrating Action of Low Carbohydrate Intake—In studies on the dietary treatment of diabetes mellitus, Adlersberg and Porges observed that the ratio between fat and carbohydrates influences also the water exchange of the organism, and they decided to investigate this problem. They found that the carbohydrates have a water retaining action. This storage of water does not take place in the blood but rather in the tissues, particularly the skin. On the other hand, a diet deficient in carbohydrates has a distinct dehydrating action and in this manner has an antiphlogistic effect. The low carbohydrate diet can be employed with good success not only in edemas of various origins but also in inflammatory exudates, for the limitation of the quantity of sputum in bronchiectasis and, finally, as an "antiphlogistic diet" in certain inflammatory processes.

New Gonococcic Antigen—Witebsky's antigen is prepared in the following manner. A strong suspension of various strains of gonococci is left to stand for several days in 50 per cent alcohol. Then a certain small amount of lecithin, the exact quantity of which is determined in preliminary tests, is added to the "stock antigen." The antigen is not filtered and thus consists of dissolved and nondissolved parts and should be well shaken before it is used. A measured quantity of the well shaken gonococcic antigen is put into a small porcelain dish and is evaporated in the water bath. Immediately following the evaporation, the residue is mixed with physiologic solution of sodium chloride so as to obtain five times the volume of the evaporated extract, and 0.25 cc. of this suspension serves as antigen. The test is a complement fixation and should use four different amounts of patient's serum inactivated by keeping it for half an hour at a temperature of 56°C. The serum, diluted 1:3, is put into four test tubes to the respective amounts of 0.25, 0.15, 0.1 and 0.05 cc. The difference in volumes is made up to 0.25 cc. by the addition of sodium chloride solution. Then 0.25 cc. of the antigen suspension and 0.25 cc. of 1:15 diluted serum from guinea-pigs are added. The mixtures are then placed for one hour in the incubator at 37°C. Then 0.5 cc. of a mixture of equal parts of sheep's blood suspension and of diluted amboceptor is added. The diluted amboceptor should correspond to from four to five times the dose of completely dissolving amboceptor. Then the test tubes are again incubated. Control of serum and extract is necessary. To control the serum it is sufficient to mix the largest dose of serum with 0.25 cc. of physiologic solution of sodium chloride and 0.25 cc. of guinea-pig serum diluted 1:15. Control of the extract is performed by mixing 0.25 cc. of the diluted extract with 0.25 cc. of the sodium chloride solution and with 0.25 cc. of the 1:15 dilution of guinea-pig serum. The reaction is read following hemolysis of the controls and a second time after renewed incubation of from one-half to one hour. In clearly positive reactions, even the second reading shows complete inhibition of the hemolysis. Only the reactions that prevent hemolysis in at least two dilutions of serum should be considered positive. The author employed this complement fixation test on several thousand serums. He considers the specificity satisfactory, the only difficulty being the differentiation from tuberculous processes. About its sensitivity he states that the reaction is

still negative in new infections because from two to three weeks is required before the antibodies in the serum are sufficiently characterized

Medizinische Klinik, Berlin

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- Aphasic Disturbances of Speaking Capacity and Disturbances in Understanding of Speech E Forster—p 1331
- *Foundations of Iodine Therapy in Internal Medicine H Liebig—p 1334
- Experiences with Vaginal Cesarean Section and Its Late Results O Hajek—p 1336
- *General Nervous Rheumatism High Incidence in Girls and Women Owing to Unsuitable Clothing R Milner—p 1336
- Differential Diagnosis and Therapy of Angina Pectoris A Lehnendorff—p 1340
- *Fatal Mercury Poisoning Originating in Vagina K Montzka—p 1343
- Normal and Pathologic Erythrocytic Hemogram in Persons of Advanced Age F Laseh and K Triger—p 1346
- Structure of Retina as Foundation for Classification of Neurons A Kohn—p 1348
- New Method of Sterilization in Surgery A Baumgarten—p 1351

Iodine Therapy in Internal Medicine—Liebig calls attention to the fact that free iodine in solution has great affinity for living tissues and that this property is the basis of its antiseptic, hyperemic, anti-inflammatory and resorptive actions. The author shows that iodine is readily absorbed by the organism and explains its action in promoting secretion and dissolving mucus. After emphasizing the value of iodine therapy in tertiary syphilis, particularly in gummas, he discusses the practicability of iodine treatment in atherosclerosis. He describes his own studies and reviews those of other investigators on the mechanism of action of iodine in atherosclerosis. He found that iodine increases the combining power of the serum for cholesterol, and he thinks that this prevents the lipid infiltration of the vascular intima and thus explains the action of iodine at least partially. He discusses the influence of iodine on the metabolism and particularly its effect on the thyroid. He calls attention to the value of iodine salts in the treatment of poisoning by heavy metals, especially in lead poisoning.

Nervous Rheumatism in Girls and Women—Milner discusses a form of nervous rheumatism that is found mainly in girls and women, the incidence being five times as high in women as in men. The men who develop this form of nervous rheumatism are frequently exposed to wet and cold. The disorder becomes manifest in the form of severe pains in the legs and feet, often erroneously ascribed to flatfoot formation and wrongly treated. In the arms, the nervous rheumatism frequently leads to more or less extended pains that radiate primarily from the region of the "small shoulder joint" (acromioclavicular joint) and go through the arm, sometimes to the fingers, but also to the neck and to the upper regions of the thorax and of the scapula. When the rheumatic pains appear in the trunk, they are easily misinterpreted as results of an internal disorder and may lead to unnecessary operations. The author sees the main cause of this nervous rheumatism in the too light and unsuitable clothing worn by women, and he thinks that proper clothing is one of the main factors in the prevention and treatment of this form of rheumatism.

Fatal Mercury Poisoning Originating in Vagina—Montzka reports a case of mercury poisoning originating in the vagina and ending fatally on the tenth day. At the site of action the mercurial preparation produced extensive corrosions with grayish-white coating, superficial necroses and, in the deeper layers, suppurative inflammations. The other toxic effects differed from those that follow the oral intake of the poison only by the absence of changes in the stomach and jejunum. The author reviews other cases of poisoning produced by mercurial suppositories or by vaginal irrigations with solutions of corrosive mercuric chloride, and he describes one case in which a man gave himself a mercurial enema to counteract an ovum. The latter case is noteworthy because it proved the efficacy of dextrose and sodium bicarbonate in mercurial poisoning. The author points out that, in the nephroses of acute poisoning by mercury, roentgen therapy is occasionally helpful. He emphasizes that mercurial poisoning from the vagina is not entirely rare but that its diagnosis may be difficult as the patient may keep the vaginal irrigation secret because it was done for the purpose of inducing abortion. In

doubtful cases the chemical analysis of the excretions may clear up the case, but it should be remembered that the elimination of 0.01 mg is normal, since minute quantities of mercury are contained in the foods.

Zeitschrift für Immunitätsforschung, Jena

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- *Methods of Serologic Cancer Diagnosis by Lipoid Flocculation H Lehmann-Facijs—p 181
- Hemolysis Colloidal State and Irradiation J Schubert—p 205
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- Chemotherapy of Bartonella Anemia of Rats with Compound of Arsenic and Antimony P Uhlenhuth and W Seiffert—p 352
- *Active Substances and Functional Changes in Anaphylactic Shock W Zechnall—p 357
- Use of Alcoholic Pallidum Suspensions in Serodiagnosis of Syphilis R R Hoeltzer—p 368

Serologic Cancer Diagnosis by Lipoid Flocculation—Lehmann-Facijs describes several methods or modifications for the improvement of the serologic diagnosis of cancer by lipoid flocculation. Centrifugation of the serum-antigen mixtures was a requirement for all these tests. The author mentions the following as the characteristics of the serologic diagnosis of malignant tumors: 1. Interventions on the antigen in place of the primary alcoholic carcinoma extracts, certain of their fractions were used, namely, the phosphatide fraction that is insoluble in acetone and certain fatty acids. 2. Interventions on the serum: first by precipitation of the euglobulin fraction containing the antibody. In this process a further purification and an improvement of the method was obtained by the preparation of the subfraction soluble in sodium chloride. The phosphatide fraction and the cephalin fraction extracted from it proved to be suitable antigens. It was necessary to employ these extract fractions in the form of dense suspensions, which were obtained by slow dilution, in the course of the preparation, a slight lecithinization of the phosphatide extracts proved helpful. Further, intensification of the reaction capacity of the tumor serums was tried by first treating them with hydrochloric acid. Flocculability of the carcinoma serums was actually produced thereby, provided the action of the acid had been sufficiently intense. The acetone soluble fatty acid fractions of the alcoholic carcinoma extracts served as antigens. About half of the carcinoma serums that had been treated with acid produced flocculation also with a suspension of oleic acid. The inclusiveness of the reaction differed with the use of the various extracts and was independent of the histologic type of the original material. 3. The antibody nature of the reacting substances in the tumor serums was proved by separation experiments. It was found that the oleic acid suspension is capable of combining antibodies from the globulin of the tumor serums, which are separated by thermic influences and which, by a flocculation reaction, can be demonstrated again in the separation fluid.

Anaphylactic Shock—Zechnall investigated the theories on the pathogenesis of anaphylactic shock that stress the significance of the potassium content of the serum and that assume a glycogen intoxication. He found that passively sensitized guinea-pigs show during anaphylactic shock a considerable increase of the potassium content of the serum. Potassium salts administered intravenously are eliminated from the blood stream of sensitized animals much more slowly than from that of normal animals. This proves that the sensitization process changes this function. Injection of glycogen into the blood stream does not produce anaphylactic shock in normal or in sensitized animals and the author considers it improbable that glycogen plays a part in the pathogenesis of anaphylactic shock.

Zeitschrift für klinische Medizin, Berlin

125 195 386 (Sept. 23) 1933

- Angina Pectoris and Anoxemia S. Dietrich and H. Schwiegl —p. 195
- *Physical Chemical Foundations of Predisposition to Edema in Pregnancy and Obesity E. Barath and P. Weiner —p. 243
- Therapy of Addison's Disease with Suprarenal Extracts G. A. Kreuzwendedich von dem Borne —p. 249
- *Influence of Potassium-Calcium on Blood Pressure Blood Cerebrospinal Fluid Barrier W. Lowenstein —p. 267
- Physiologic Daily Fluctuations of Leukocytes K. L. Zirm and W. Bruckmeier —p. 282
- *Increasing Strophanthin Action by Subsequent Calcium Administration in Patients with Cardiac Decompensation A. Boger and F. Diehl —p. 294
- Sphygmomanometry of Korotkow's Sounds M. Arjeff and G. Frenckell —p. 309
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- Relations Between Symptoms of Lead Poisoning and Porphyrin Elimination on Basis of Studies on Patients with Lead Poisoning H. T. Schreus and C. Carrie —p. 330
- Action of Amidopyrine on Carbohydrate Metabolism G. Krause and H. Marx —p. 341
- Dextrose Tolerance in Hypertension K. Jansen —p. 351
- Deneration of Suprarenals a Promising Therapy of Diabetes Mellitus? H. Lucke —p. 361
- Peptone Actions and Their Relations to Problems of Allergy M. Samter —p. 370

Tendency to Edema in Pregnancy and Obesity—Barath and Weiner show that during pregnancy and in obesity a latent tendency to edema may exist in persons in whom edema is not evident. Studies carried out by von Kormy and von Farl as disclosed that disturbances in several physical and chemical factors, particularly in the equilibrium of the colloid osmotic pressure and the venous pressure, are the cause of this tendency to edema. The authors studied these factors on pregnant and on obese persons and reached the same conclusion, namely, that the colloid osmotic pressure is decreased and that thus the equilibrium between this pressure and the venous pressure is disturbed. The authors illustrate the differences in the relationship of these two factors in normal persons and in those presenting a tendency to edema by entering the values of these factors into a system of coordinates.

Influence of Potassium-Calcium on Blood Pressure—In comparing the potassium-calcium quotients of the blood and of the cerebrospinal fluid in patients having various types of hypertension, Lowenstein detected a relative increase in calcium and a relative decrease of potassium in the cerebrospinal fluid when the values were compared to the conditions found in the blood. Although the absolute numbers remain within the limits of the normal fluctuations, it may be assumed that this change in the ratio of the cations of the blood to those of the cerebrospinal fluid is not an entirely indifferent matter. There is no evidence that these changes are the primary factor in hypertension, for they imply the existence of lesions in the central nervous system. However, in case of an increased irritability of the centers regulating the blood pressure, even a slight deviation in the electrolytic composition of the cerebrospinal fluid, which of course always accompanies a change in the reaction of the fluid (normally more alkaline than the blood), may produce changed impulses in the sensitive sympathetic centers. Thus the authors believe that the electrolytes and their quantitative changes in the cerebrospinal fluid and in the blood exert an influence on the development of hypertension. The first links in this pathogenic process are probably toxic, trophic or other still unknown processes that cause changes in the composition of the cerebrospinal fluid. These changes in turn, by influencing still more susceptible centers, cause hypertension and, parallel with it, deviations in the electrolytic status of the blood.

Calcium and the Action of Strophanthin—Boger and Diehl, summarizing the results of their studies on animals and their observations on human beings, state that calcium produces an influence on the circulation of patients showing cardiac compensation similar to that produced by digitalis preparations. A therapeutic dose of calcium, administered without digitalis, influences particularly the peripheral circulation, in that, similar to digitalis, it exerts an antagonistic action on the sympathetic nervous system. The influence of calcium on the sympathetic becomes manifest in an increase in the peripheral resistance, which, as the authors were able to show, is not due to an increase in the circulatory volume. The influence on the vagus shows itself in a considerable decrease in the frequency of the pulse which, just like that produced by digitalis, leads to a

prolongation of the diastole but leaves the systole practically unchanged. The acceleration of the velocity of the pulse wave following administration of calcium, which runs parallel with the increase in the vascular tonus caused by vasoconstriction, likewise indicates the similarity of the action of calcium and of the digitalis preparations. The authors investigated whether the action of strophanthin could be increased by calcium in patients having cardiac decompensation. They found that especially in patients presenting an insufficiency of the left heart a further increase in the circulatory volume can be obtained by giving an injection of calcium after the strophanthin has been administered. This observation is especially valuable for cases in which the stasis is in the lesser circulation (for instance, in acute pulmonary edema), since by further increasing the heart volume it is possible to lead more blood from the lesser to the general circulation.

Ugeskrift for Læger, Copenhagen

95 967 1012 (Sept. 14) 1933

- *Roentgen Treatment of Certain Metrorrhagias E. Husted —p. 91

Roentgen Treatment of Certain Metrorrhagias—Husted concludes that roentgen treatment is indicated in cases of irregular glandular hypertrophy of the endometrium in older women when diagnosis has been confirmed by histologic examination. In patients in the middle and late thirties, curetting of the uterine mucous membrane should be followed by expectant treatment, if recurrence sets in, roentgen treatment is in order, though possibly not until after repeated curettage. In young women, treatment should consist of possibly repeated curetting in case of frequent recurrence or of exhaustion due to the hemorrhages, roentgen treatment should be given to bring about a temporary menostasis. Extirpation of the uterus should be a last resort reserved for the rare cases in which the hemorrhages cannot be controlled by roentgen treatment.

95 1013 1060 (Sept. 21) 1933

- *Induced Abortion on Medical Indication Two Hundred Cases P. Kühnel —p. 1013
- *Later Fate of Our Eclampsia Patients A. Olsen —p. 1019
- Endogenic Adiposity—Elhtyran' V. Brandt —p. 1026

Induced Abortion—Kühnel finds that, even when performed on proper medical indications and by practiced technicians under the most favorable external circumstances, induced abortion is accompanied by a grave risk and he states that the statistics available from Russia emphasize his point of view. There were in his material a primary mortality of 1 per cent, graver hemorrhage in 8 per cent of the cases, lesions in more than 10 per cent and infection in 18 per cent.

Later Fate of Eclampsia Patients—From his after examinations, Olsen concludes that neither the course of later pregnancies and births nor the patient's later state of health affords evidence for the interruption of pregnancy solely on the basis of an earlier eclampsia or eclampsism.

95 1061 1094 (Sept. 28) 1933

- Relation Between Zoster and Chickenpox O. Haslund —p. 1061
- *Ochronosis O. Bouet —p. 1064
- Occurrence of Endemic Goiter in Denmark T. Dalsgaard Nielsen —p. 1067
- Change in Wassermann Reaction J. R. Mørch —p. 1069

Ochronosis—Bouet's patient was admitted for treatment of a typical carbocochronosis after daily use for three and one fourth years of a 2 per cent solution of phenol on a large ulcer of the leg. Ulceration was present from the condyle of the tibia of the right leg to the lowest point of the tibia, with small ulcerations on the anterior and posterior parts of the knee, which was almost fixed at an angle of from 40 to 45 degrees. The entire leg was noticeably atrophied. The skin of the face and the cartilage of the ears were discolored. Roentgen examination revealed marked halisteresis of tibia and fibula. Amputation of the leg was done. The pronounced anemia, exhaustion and lack of appetite are regarded as undoubtedly due to intoxication with phenol and phenol derivatives. The increased phenol in the urine, even five or six weeks after the end of the treatment with phenol, is thought perhaps to result from elimination of phenol that may have been bound in the organism. This case, together with previously reported cases, warns that careful attention is necessary when a patient is found to have started treatment with phenol.

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THE PROSTATIC PROBLEM

A REVIEW BASED ON DEVELOPMENTS OF THE
PAST THREE YEARS

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NEW YORK

There has been a tremendous wave of excitement and enthusiasm about vesical neck resection, which has swept the whole country. It seems to me most appropriate to stop and take stock to see whether such an avalanche of cases is justified.

A great deal of attention has always been paid to obstructions at the vesical orifice. A knowledge of the presence of the prostate gland and its abnormalities was known to the ancients.

The history of early efforts to relieve prostatic obstruction by various instruments has been presented so often of late that a repetition here is unnecessary. Suffice it to say that the instruments were so inadequate and operations on the prostate improved in quality so materially that open surgical operations on the prostate were the procedures of choice. The development of safety factors and the resultant low mortality in this procedure cannot be carelessly laid aside on the appearance of improved mechanical instruments.

In our community there are some ten million souls, which means that there must be about five million males. Our clinic is not the largest in the country but it is and always has been a very active one. We average about 1,000 cases a month in our outpatient department in addition to the private cases of the twenty-four members of our staff. It is therefore evident that we have a great volume of cases to examine from which to choose our operable cases.

Up to May 1, 1933, we have done 144 closed vesical neck operations over a period of twelve and one-half years; therefore we listen with amazement to the reports of tremendous numbers of cases from the clinics of others with little if any more volume of patients than we ourselves have. There are reports of 300, 500, and one ambitious person has even reported over 900 cases of vesical neck resection, all done within the last three or four years. One may draw only one conclusion from these voluminous reports and that is that there are hundreds of patients being operated on who do not need the operation at all.

Some of the most active proponents of vesical neck resection openly promote the resection of any enlargement of the prostate whether there is residual urine or not. I cannot condemn this procedure too much

because every one knows that vesical irritation due to enlargement of the prostate can often be cured by hot rectal douches, prostatic massage and the like. Furthermore, if one slices off the intra-urethral projecting part of the gland, the prostatic ducts are sealed off and the resulting scar prevents the proper drainage of pus, detritus and prostatic fluid, so that the prostate becomes a serious focus of infection. Thus this procedure can be considered only as meddling surgery and should be discountenanced by the thinking members of the profession.

A decided objection to the tidal wave of vesical neck resections is the fact that many physicians who are not properly trained surgeons are doing vesical neck operations. Such persons are not prepared to decide on the proper procedure to pursue or to do a prostatectomy, should it be the operation of choice.

It is my opinion that a urologic surgeon should be prepared to do any type of operation, not only on the urinary organs but on any part of the anatomy bordering on the urinary organs. The following is a case in point.

W. T., a white man, aged 62, admitted to the hospital Nov 29, 1932, had had the prostate gland removed at a hospital in Panama. On admission, the bladder was draining through a suprapubic sinus. November 30, a vesical neck resection with the Kirwin instrument was done. December 5 after a positive diagnosis of carcinoma had been obtained from the laboratory, ten seeds containing 20 millicuries of radon were introduced into the prostatic bed. His convalescence was uneventful until suddenly, December 8 he had severe pain in the right lower quadrant, and hemorrhage from the bladder was suspected. A suprapubic exploration showed no evidence of a rent in the bladder, and a right rectus incision was made to determine the cause of the trouble.

The peritoneum was opened and immediately revealed a moderate amount of free fluid. The wall of the intestine was injected and a walled off ruptured appendix abscess was found. The appendix itself could not be definitely located. A large Penrose drain was inserted into the bladder and another into the abscess cavity. The patient progressed very well following the second operation. At one time it was necessary to put tubes down into the appendicular incision and irrigate with surgical solution of chlorinated soda. The suprapubic drain was removed and a catheter inserted and, Jan 7, 1933, the patient was discharged with a retention catheter in place to return to his home in Norfolk, Va.

Having decided to operate on the patient by means of vesical neck resection the surgeon then proceeds to prepare the patient for the event. This preliminary preparation must be accomplished with as much thoroughness as for any type of prostatectomy. I protest vigorously against the common practice of minimizing vesical neck resection, particularly atrocious and untrue is the statement that it is a mere office procedure. My own experience and that of others particularly that of Dr. Alcock convinces any right-thinking person that this is as serious an operation as exists in surgery and

From the Department of Urology (James Buchanan Brady Foundation) of the New York Hospital.
Read before the Section on Urology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 1, 1939.

is not to be taken lightly in any sense of the word I do not consider it necessary to go into the details of the preliminary preparation of the patient for prostatectomy, as that subject is now well understood by all urologists and most general surgeons. Suffice it to say that drainage should be accomplished by any necessary means until the patient is in as good general condition as he can be, as indicated by renal functional tests, blood chemistry and the like. A preliminary bilateral vasectomy is advisable.

TECHNIC OF THE OPERATION

The anesthesia used should be regional as that is commonly considered to be the most suitable in cases of urinary disturbance.

The instrument to be used is the one with which the operator is most familiar. In our clinic we prefer the Kirwin vesical neck resector with the McCarthy unit, manufactured by Mr. F. C. Wappler. We use the Kirwin instrument because the end is protected, the vision is perfect and the pieces always come out. It is most important for the operator to confine his activities with this tremendously potent cutting device to the lower third of the vesical orifice. Any incision outside this area may lead to disaster, as the wall of the bladder neck at other points is thin and easily cut through.

If the field becomes clouded, one must irrigate until vision is perfect or wait until another dry. Cutting in the dark is too dangerous and should be discounted absolutely.

All the bleeding of a serious nature should be controlled on the operating table. If it is impossible to do so with intra-urethral instrumentation, a suprapubic cystotomy should be done and the bleeding stopped under direct vision if necessary. If there is not excessive bleeding, an intra-urethral indwelling catheter size 22 or 24 F. is placed in position and held there by adhesive tape.

POSTOPERATIVE CARE

If the operation has been long continued and considerable blood lost, the patient is given an intravenous or subcutaneous infusion of physiologic solution of sodium chloride or Ringer's solution. The discomfort suffered after the effects of the anesthetic have worn off is controlled by hypodermic injections of codeine, and if these are not effective morphine may be used.

It is wise to keep at least 50 cc. of boric acid solution in the bladder at all times so that any blood occurring there will be well mixed with the solution and no jelly-like clots may collect to interfere with the passage of fluid out through the catheter. The bladder should be emptied every two hours and 50 cc. of fluid replaced for a period of about eight hours. Longer periods may be allowed to elapse between evacuations after this time. All fluids introduced into and returning from the bladder should be measured.

The scrotum should be elevated even when a bilateral vasectomy has been performed.

The hemoglobin should be taken before operation and daily thereafter, if indicated. If it drops to a dangerously low level, whole blood transfusion, as practiced by Dr. Rufus Stetson of New York, should be given, repeatedly, if necessary.

The urine of almost all prostatic patients is infected. The prostatic fluid always contains pus in clumps and a generous flora of bacteria. Therefore a major disturbance such as vesical neck resection is almost universally followed by cloudy infected urine, which persists for a long period of time.

The cut surface develops a slough which does not come away entirely for many weeks, and it is not uncommon for the urine of patients thus treated to be cloudy for several months. This almost never results seriously, although it annoys the meticulous patient. We have noticed that the older and more decrepit the patient, the more extensive the slough and the longer the persistence of cloudy urine.

All patients complain of frequency and dysuria after operation and some of them have difficulty in emptying the bladder for a long time. Many have some residual urine for a few days. A great many patients, however, pass a much better stream of urine from the beginning than was possible before operation, and some of them have very little pain.

It is our practice to irrigate the bladder daily while the patient is in the hospital and frequently for the first month after he leaves. A sound is passed at weekly intervals for two months after the operation and occasionally thereafter. Prostatic massage, hot rectal douches and sitz baths are recommended in many cases and found to be very beneficial.

A summary of the cases treated by vesical neck resection comparing the old Young punch cases with

Comparison of Results of Suprapubic Prostatectomy, Perineal Prostatectomy for Adenoma and Carcinoma, Young Punch and Vesical Neck Resection in the Department of Urology (James Buchanan Brady Foundation) of the New York Hospital up to May 1, 1933

	Total Number of Cases	Average Age in Years	Post-operative Stay, Days	Total Number of Deaths	Mortality Rate per Cent
Suprapubic prostatectomy	70	62	25	8	11.43
Perineal prostatectomy for benign hypertrophy	535	68	21	26	4.8
Perineal prostatectomy for carcinoma	79	63	26	16	20.25
Vesical neck resection	89	57.7	13.4	9	10.11
Young punch	55	46	9.5	3	5.45
Total	828			62	7.45

the new vesical neck resections and the results of perineal and suprapubic prostatectomy is expressed best in the accompanying table, which is self explanatory.

COMPLICATIONS

Our experience is limited to a small group of carefully selected cases, and yet, even under almost ideal conditions, we have had every possible complication that we have ever experienced with prostatectomy.

Incontinence after this operation is rare, but we have experienced it in our group of cases several times. We are under the impression that it may occur as a result of too wide distention of the urethra, particularly of the external sphincter, both by the instrument and more particularly by the indwelling catheter afterward. It is our practice at present to use a rather small catheter after the operation. We feel that if it is not left in position too long there is not so much danger of permanent incontinence.

In this series of cases, all types of hemorrhage have been experienced. Profuse bleeding has occurred on the operating table, requiring the greatest amount of ingenuity to control it. In one case the bladder had to be opened and packed four hours after resection, although the condition was apparently under control when the patient left the operating room.

Another patient suddenly began to bleed four days after operation and the hemorrhage was so violent that

the bladder was opened and packed, and his life was saved by giving him an immediate blood transfusion.

A most interesting case of delayed hemorrhage was the following:

J. V., a man, aged 39, readmitted on several occasions recently, left this hospital, Oct. 24, 1932, following a surgical operation on the urinary bladder neck known as a "vesical neck

ing upward as far as the diaphragm had absorbed the blood and, when dissected out and squeezed, gave up the blood just as a sponge would.

Two cases in our series have sloughed through at the vesical orifice resulting in pelvic cellulitis and peritonitis, and, in spite of prompt operation, as soon as the condition was recognized death resulted in both instances.

Our case of appendix abscess following vesical neck resection has already been described. Fortunately, prompt operation and efficient drainage saved the man's life.

Epididymitis is very common following vesical neck resection unless bilateral vasectomy is performed.

Recurrence of the condition is to be expected, as it is absolutely impossible to remove all the prostate with any instrument thus far devised. In our series we have had several recurrences already. All but one of these patients insisted on having the prostate removed by open operation. The one on whom another vesical neck resection was done said he would give the method one more chance and if it was not successful he would have the open operation.

WHAT OPERATION SHALL THE SURGEON PERFORM?

The question naturally arises, When shall the surgeon do a vesical neck resection, when shall he do a suprapubic prostatectomy and when a perineal prostatectomy?

It is my opinion that a vesical neck resection should be done when the patient's symptoms are accompanied by

1. An enlargement of the subcervical group of glands with or without residual urine.
2. A fibrous bar at the vesical orifice.
3. Moderate adenomatous enlargement of the prostate with not too much tissue intruding into the bladder,

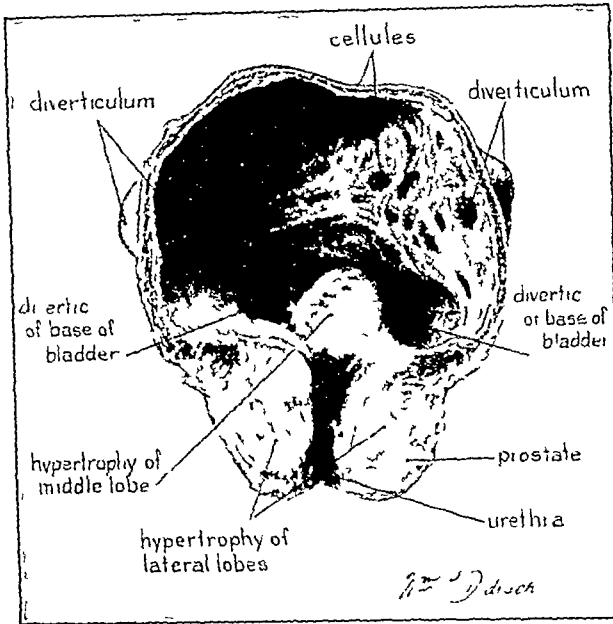


Fig. 1—Moderately enlarged middle lobe with slight enlargement and intra urethral intrusion of lateral lobes. Hypertrophy is not yet too great to permit satisfactory resection.

resection." Two days later, October 26, he returned to the hospital complaining of having seen blood appearing in voided urine, and of passing small blood clots when urinating. At the time of that admission he remained in the hospital until October 29, when he was discharged as having improved.

November 5, he again returned to the hospital complaining of having voided bloody urine. At the time of this admission, it was found that bleeding was fairly well controlled, and the treatment given was conservative, however, November 12, recent hemorrhage was noted by the appearance of bright blood in the urine, and after efforts to control the bleeding had proved unsuccessful and distention of the urinary bladder from blood clots appeared, the indication for suprapubic cystostomy for control of the hemorrhage was evident. Accordingly, cystostomy was done under gas-oxygen anesthesia and the bleeding vessels about the vesical neck were ligated. The vesical neck was packed with petrolatum gauze to aid in control of hemorrhage. The postoperative course was quite uneventful and the patient was discharged, November 29, improved.

A man presented himself at our clinic who had had a prostatectomy performed some years previously. He gave a history of recurring symptoms. Rectal examination revealed no enlargement in the prostatic region. Cystoscopy showed a slightly distorted vesical orifice, but the real trouble was found in the prostatic urethra, where there was a nodule about the size of a small marble. This seemed to be an ideal case for the use of the resectoscope. Accordingly one of my associates easily and efficiently removed the nodule in toto. The patient did well for a few days and then began to show evidence of dehydration, lowered vitality and finally shock, although there was less than the usual amount of bleeding. In spite of every effort on our part he died. Autopsy revealed a most amazing condition. Apparently at the time of the operation the wire had burned barely through the prostatic capsule near its apex but behind the triangular ligament a sizable vessel had bled outside the urinary tract. The areolar tissue extend-

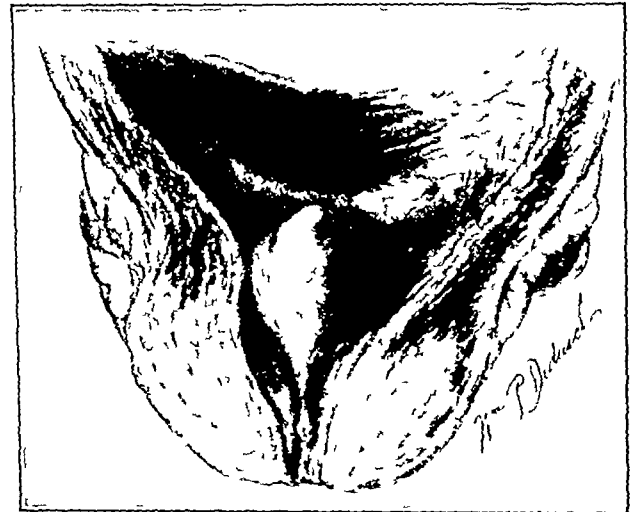


Fig. 2—Moderate hypertrophy of middle lobe but such marked intra urethral enlargement of lateral lobes as to leave no room for the manipulation of the recto scope. Such cases must be subjected to prostatectomy.

in which there is present residual urine, or when there is a history of repeated attacks of retention or difficult urination.

4. All possible cases of carcinoma of the prostate gland.

A suprapubic prostatectomy is the operation of choice when the main mass of the greatly enlarged

gland intrudes into the lumen of the bladder. Perineal prostatectomy should be performed on all others. Examination of the interior of the bladder either by cystoscopy or by observation at the time of suprapubic cystostomy for drainage tells the operator what type of procedure to follow.

Vesical neck resection is wrong in principle in cases that show evidence of absorption from a grossly infected adenomatous prostate. Partial resection of the mass results in sealing off the infected tubules of the prostate so that it becomes a serious focus of infection. The experiences that the members of the medical profession have had with similar treatment of the tonsils is ample reason not to make the same mistake. Such prostates should be removed entirely, and a partial operation is a serious menace to the health and life of the patient.

BENEFITS OF VESICAL NECK RESECTION

There are certain types of cases in which resection of the vesical neck is definitely indicated and when,

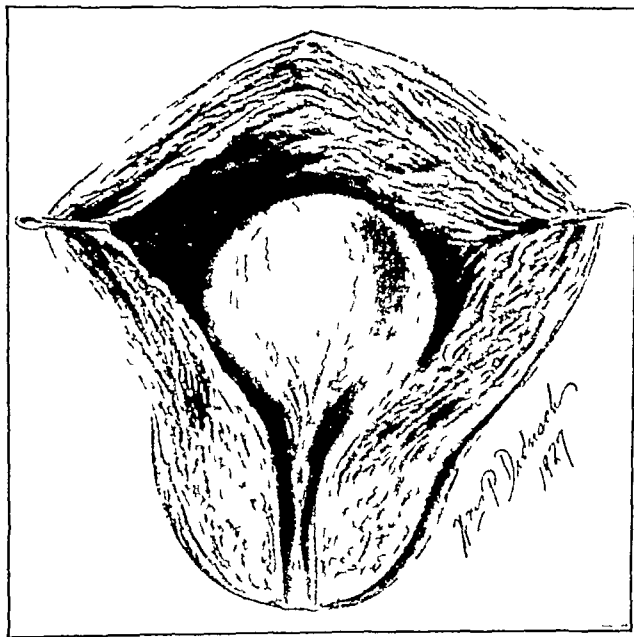


Fig. 3—This tremendously enlarged prostate should be removed by open operation as adequate removal with the rectoscope is impossible.

properly performed it will result in spectacular relief of symptoms, which is most gratifying to the patient and the physician.

One of this group is illustrated by the patient suffering from an enlargement of the subcervical group of tubules. These patients have a maximum of symptoms, including frequent, painful urination and nocturia. They may have very little residual urine, which usually is clear. My own anatomic studies have shown that this lesion occurs in almost 25 per cent of all males over 30 years of age.

When a suitable patient is satisfactorily operated on by this method, he may expect to reduce the length of his hospital stay, and after the slough has come away and his urine is clear and sparkling it is most cheering to have brought this about without open operation.

ANALYSIS OF DEATHS

It is instructive to review the cause of death in our failures with a view to the prevention of future calamities.

Our first death occurred in a white man (L. C.), aged 44. He had a moderate intravesical intrusion of the subcervical group of tubules. This was removed with one of the new instruments. He showed evidence of shock some hours later. Suprapubic operation with drainage of the bladder and perivesical spaces, infusions and transfusions failed to prevent his death, Dec. 3, 1931, two days after the original operation.

The second death was that of H. D., a white man, aged 64, suffering from adenomatous hypertrophy of the prostate gland. A vesical neck resection was done, Jan. 26, 1932, under spinal anesthesia. He died from pneumonia fifteen days later.

The third patient to die was J. S., a man, aged 67, who was operated on, Feb. 25, 1932, for the removal of a recurrent tag of prostate that caused obstruction. He reacted poorly and finally went into a deep and fatal shock. His death occurred on the second day following operation. Autopsy showed extensive postperitoneal hemorrhage, which could not possibly have been relieved by a second operation.

The fourth death was that of P. H., a man, aged 57, who had a carcinoma of the prostate with obstruction. He was subjected to vesical neck resection, Sept. 14, 1932, with implantation of radium. He gradually became weaker and weaker, finally dying, Oct. 16, 1932. Autopsy was not obtainable.

The next death was that of R. G., a man, aged 70, who was suffering from a moderate sized, benign adenomatous prostate. He had a vesical neck resection Sept. 21, 1932. The following day he suffered from a cerebral hemorrhage and died.

The sixth death was that of B. H., a man, aged 60, suffering from extensive carcinoma of the prostate with retention of urine. A vesical neck resection was performed, Sept. 30, 1932. He seemed to be doing excellently for a time but had a turn for the worse and died, November 7, the thirty-eighth postoperative day, of uremia.

The next death was that of R. F., a man, aged 76, who had a large adenomatous hypertrophy of the prostate gland. I was prevailed on to do a vesical neck resection by the patient who had read an article in the newspaper on the subject. It was not a suitable case, the prostate being too large to have this procedure done. He did not do well after the operation. He suffered more than the usual pain, there was more than the usual bleeding, and finally suprapubic pain developed. A suprapubic opening the second postoperative day revealed a prevesical infiltration of urine and pus. He died of shock that night.

The eighth fatality was that of J. W., a man, aged 64, operated on by one of the most competent members of my staff, Jan. 16, 1933. He died that night following and exploratory incision to determine the cause of his great shock.

The last death in this series occurred Feb. 18, 1933, three days after vesical neck resection for carcinoma of the prostate. Secondary open operation was necessary in this case also, in order to stop hemorrhage and repair a rent in the bladder.

By a review of these deaths it is noted that any kind of complication common to open prostatectomy can and does occur even in very carefully selected cases. Non-fatal complications of all sorts are possible and do occur in this group of patients.

CONCLUSIONS

Vesical neck resection has a definite place in the armamentarium of the profession for dealing with certain types of enlargements at the vesical orifice. In fact, the new instruments recently developed have materially widened the scope of the Young punch. When successful, this procedure is economical for the patient and gratifying to his physician. The field for its employment, however, is limited. It is unwise to attempt this procedure on massive adenomatous prostates. It is particularly illogical and improper to remove partially a prostate filled with pus which is being absorbed because of the fact that the tubules are sealed off, and it becomes a serious focus of infection. One should take a leaf out of the book of knowledge regarding tonsillectomy and not repeat mistakes in this regard.

On the other hand it is ideal for patients suffering from carcinoma of the prostate, small projections from the floor of the vesical orifice, and fibrous bars

This operation is far from being an office procedure, the avalanche of statistics seems to indicate that many patients are being operated on who do not need it. It is just as important to safeguard a case suitable for vesical neck resection as any other prostatic case. All the usual preoperative tests and maneuvers for improving the patient's general physical condition should be performed.

Patients on whom vesical neck resection have been performed are subject to all the complications that have occurred in our prostate series.

Our mortality rate is 10.11 per cent in a series of eighty-nine cases, which is approximately the same as that of our suprapubic prostatectomies. The lowest mortality rate, 4.8 per cent, occurs in our series of 535 perineal prostatectomies for benign adenomas.

899 Park Avenue

ABSTRACT OF DISCUSSION

DR OMAR F. ELDER, Atlanta, Ga. A careful rectal and cystoscopic examination gives one an idea as to the size of the prostate. Air cystograms should always be made for stones have been found in many of these cases and it is well to know this beforehand. Dr Lowsley states that there is a place for resection and I firmly believe that in 99 per cent of all types of obstruction resection is the key. It is a question of technique and if one knows what one is going into one can relieve the patient of his obstruction. In the case of a very large prostate, such as is rarely found, one can use the loop and remove a portion and a week later do the regular resection. Dr Folsom likes to remove the whole thing in one bite, which may be better in some cases.

DR J. R. DILLON, San Francisco. When I began to attend these meetings some fifteen years ago there was generally a yearly battle as to the relative merits of suprapubic and perineal prostatectomy. About the time the old groups decided to pursue their own course in the method each one was particularly trained, a new group of resectoscope operators lined up against the old groups. Allied with this new group of 'resectionists' is found an army of commercialists with an array of instruments and electrical units. These allies are reaching the public by sending advertising literature along with reprints, as well as by salesmen to interview physicians, especially those with a small hospital or connected with an institution that has not installed an outfit. The men in teaching institutions are besought by small town practitioners who want to be taught in from two to ten weeks the simple spectacular operation of taking out a prostate transurethrally. Many of these men do not own and have never used a cystoscope. Urologists have made splendid progress in the last fifteen years in lowering the mortality rate in prostatectomies in both suprapubic and perineal groups. It was learned years ago that any prostatic nodule overlooked in the course of a prostatectomy will enlarge and produce obstruction in from three to six years in an older more debilitated and more damaged cardiorenal patient. Inclusions en masse and much more careful inspection of the prostatic capsule under vision have practically eliminated these secondary prostatectomies, and one can confidently assure the patient that he will live out the remainder of his life with no serious urinary disturbance. In the few instances in which they do come back with a new growth it is with a carcinoma which has started in the posterior lamella and is never removed in either open or closed methods. There have been localized carcinomas removed in lateral lobes by the open method. These were undoubtedly cancer cures in many instances and must be reckoned with in the ultimate mortality ratios. Most of the statistics on the resectoscope operations are based on all operations including contracted bladder neck types. The resectoscope has come to stay as a development of the punch operation pioneered by Young, Caulk, Collins and McCarthy. I shall continue to limit its use to contracted bladder necks

and to moderately hypertrophied prostates giving obstructive bladder symptoms, with little or no residual urine in men who are still sexually active. In such cases I have had a high percentage of gratifying results. But in old men who have a residual urine, and an impaired cardiorenal system, who have to go through a stage of preoperative treatment and run the same operative risks and complications, I cannot see the sense in avoiding the proved permanent result of an open prostatectomy.

DR N. G. ALCOCK, Iowa City. I would like to invite Dr Lowsley to the Scientific Exhibit in order to show him the charts and exhibits of every patient operated on. I would like to invite him to Iowa City, to have him go over every case in the hospital. I am sure he would say after seeing them that I would be very foolish to do anything else. The number of cases of prostatic patients that I can handle now is limited to the number of available beds. Previous to resection I was limited to about 100 prostatectomies a year. Now a bed that formerly took care of one patient takes care of four.

DR O. S. LOWSLEY, New York. I believe every word Dr Alcock has told us. I wish all of us were as open about statistical reports as our chairman. His results have been spectacular and it was his report at Toronto that rejuvenated me in my dying enthusiasm for this procedure, and I now have eighty-nine cases to report.

LOW BACK PAIN

WITH SPECIAL REFERENCE TO THE ARTICULAR
FACETS, WITH PRESENTATION OF AN
OPERATIVE PROCEDURE

RALPH K. GHORMLEY, M.D.
ROCHESTER, MINN.

Many theories have been presented regarding the pathologic changes that underlie low back pain. The subject is still far from settled, although year by year knowledge of the condition improves. To any one who studies the skeleton, the vertebrae particularly, and their anatomy, the importance of the articular facets in the function of the spinal column must be obvious. Further study of a series of spinal columns will reveal that in many of them are changes around the articular facets which must produce symptoms.

The articular facets must be regarded as the only true joints in the spinal column.¹ As true joints, hyaline cartilage covers their surfaces and synovial membrane lines their articular capsules. This articular capsule is more redundant and loose in the cervical region than in the lower portion of the spinal column. It has seemed to me that many of the aches and pains which are known as "backache" are true pains of the joints. They represent the same type of pain as that seen in arthritis of the knee or hip and the accompanying changes are characteristic of degeneration or traumatic arthritis. The pains are often static in type, that is, they can be relieved by assuming a certain posture, or they can be greatly exaggerated by assuming other postures. The severe exacerbations of pain sometimes experienced are more like the pain of a 'locking' joint than any other type of pain.

The degenerative changes that are characteristically seen in hyaline cartilage may be seen in the articular cartilage of these facets together with the eburnation of the underlying bony trabeculae. This degeneration may go on to complete loss of the cartilaginous surface,

From the Section on Orthopedic Surgery, the Mayo Clinic.
Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Cunningham, D. J. Textbook of Anatomy. New York: William Wood & Co., 1913, p. 360.

and irregular hypertrophy of the margins, similar to that seen in the advanced stages of degeneration or hypertrophic arthritis of other joints. Thus, the setting is present for a syndrome the same as that seen in many cases of hypertrophic arthritis of the hip, knee or other joints.

It must be realized, too, that there is a more or less constant strain on these articular surfaces, particularly those of the lumbosacral articulations. These surfaces act as stabilizers for the entire spinal column. They are so placed as to prevent forward slipping of the

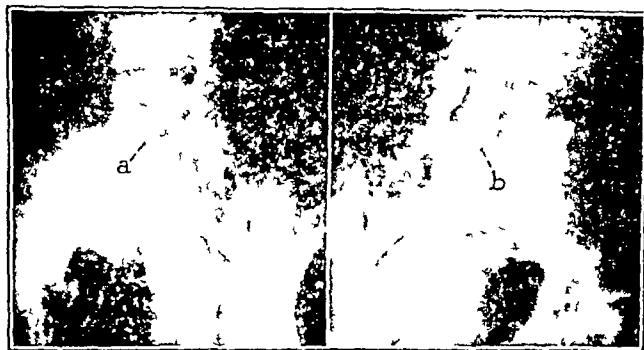


Fig 1—Right and left oblique views of lumbosacral joint showing a right lumbosacral articular facet with marginal changes suggesting a fracture and b left lumbosacral facet with hypertrophic change of traumatic origin

body of the fifth lumbar vertebra on the sacrum. Any destruction of the integrity of the surfaces under consideration may result in such slipping or in the production of spondylolisthesis. All motions of the spinal column are transmitted to these articular surfaces and even the slightest movement of the lumbar region may result in motion between them. Such movements, if there are arthritic changes in the articular facets, are likely to produce pain. The constant pressure of the surfaces of the facets, one against another, may likewise produce pain, which in many instances is hard to relieve because of the difficulty of getting the surfaces separated by any movement or maneuver whatsoever. The heavy lumbar musculature tends to hold the surfaces firmly against each other, and if spasm is set up in these muscles the surfaces are clamped tighter together.

LITERATURE

Several authors have mentioned the articular facets in the production of the complex of lame back. Goldthwait² pointed out the importance of anomalous placement of the facets and considered their relationship to certain cases of pain low in the back. He did not, however, note any changes except anomalous position of the facets, and their occasional dislocation. He seemed to regard the transverse processes as more likely to cause pressure on the nerve roots. Danforth and Wilson³ have given the most accurate anatomic picture of the lumbosacral joint. They pointed out several important facts. First, the intervertebral foramen between the fourth and fifth lumbar vertebrae is always the smallest, second, the fifth lumbar nerve root is usually the largest, third, the fifth nerve root is directly anterior to the posterior articulation between the fifth lumbar vertebra and the sacrum, and effusion

within this joint might easily cause compression, and, fourth, in the anatomic specimens "hyperextension of the spine caused the posterior superior articular facets of the posterior joints to be driven upward toward the inferior intervertebral notches of the vertebra next above and in this way diminished the size of the intervertebral foramen and might conceivably compress the nerve to some extent." The importance of changes in the facets in production of sciatic pain is obvious. These authors referred to the narrow fifth lumbar disk in some of their cases. Ayers⁴ pointed out narrowing of the fifth lumbar disk as a cause of backaches and noted that in cases of excessive lordosis the greatest strain is thrown on the articular facets.

Key,⁵ in 1924, stated that he regarded strains of sudden onset, low in the back, as true sprains, with tears of the ligaments or articular capsules, and further stated that "the referred pains are perhaps due to irritation of the fourth and fifth lumbar nerve roots by an exudate or synovitis of the adjacent joints."

Putti⁶ presented the whole subject of the importance of the articular facets in the Lady Jones Lecture in 1927. He quoted Goldthwait and Danforth and Wilson, and considered anomalies as well as pathologic changes of the articular facets as causes of sciatic pain. He stated that "the diseased joint, by its swelling and deformity changes the shape and capacity of the foramen, thus irritating and compressing the nerve within it." Again, in 1929, Ayers⁷ reviewed the subject, pointing out the importance of the narrow fifth lumbar disk and of the facets, and the fact that the nerve root

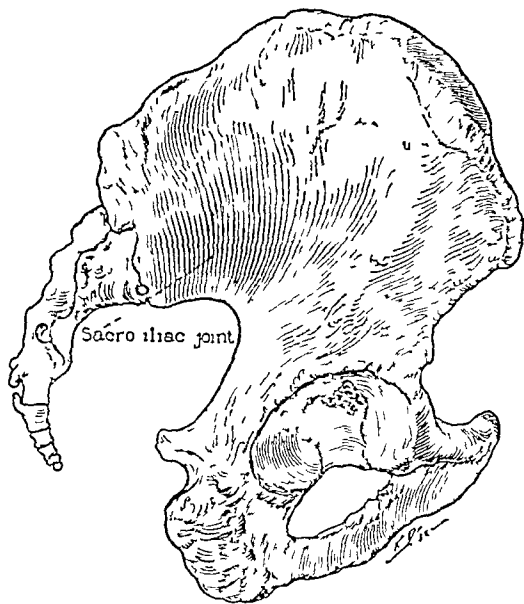


Fig 2—Projected surface of sacro-iliac joint. The level of the lower margin of the sacro-iliac joint runs parallel with the upper margin of the sacrospinous notch.

passes through the intervertebral foramen between the disk and the facets. Brown⁸ noted the changes seen in the relationship of the articular surfaces of the facets

² Goldthwait J. E. The Lumbosacral Articulation. An Explanation of Many Cases of Lumbago, Sciatica and Paraplegia. Boston M. & S. J. 164: 365-372 (March 9) 1911.
³ Danforth M. S. and Wilson, P. D. The Anatomy of the Lumbosacral Region in Relation to Sciatic Pain. J. Bone & Joint Surg. 7: 109 (Jan.) 1925.

⁴ Ayers C. E. Lumbosacral Backache, Boston M. & S. J. 196: 9-16 (Jan. 6) 1927.
⁵ Key J. A. Low Back Pain as Seen in an Orthopedic Clinic, Am. J. M. Sc. 168: 526-534 (Oct.) 1924.
⁶ Putti V. New Conceptions in the Pathogenesis of Sciatic Pain, Lancet 2: 53-60 (July 9) 1927.
⁷ Ayers C. E. Lumbosacral Backache. New England J. Med. 200: 592-608 (March 21) 1929.
⁸ Brown L. T. Conservative Treatment of Backache. J. Bone & Joint Surg. 14: 151-164 (Jan.) 1932.

in various postural changes of the lumbar part of the spinal column. Williams,⁹ in his description of the clinical picture of a "reduced lumbosacral joint space," or narrowed fifth lumbar disk, referred to the articular facets, although it is difficult to tell from his discussion how important he regarded them as causes of sciatic pain or backache.

THE "FACET SYNDROME"

There is ample evidence in the literature that others have regarded the facets as causes of sciatic pain. I

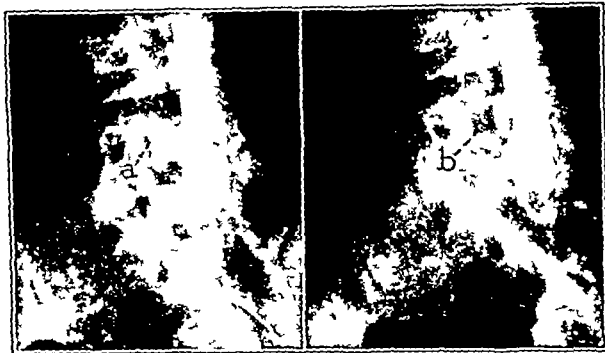


Fig 3—Lumbosacral facet on the right (a), with marked hypertrophic changes. b same region after resection of the facet had relieved the sciatic pain. The patient had spondylolisthesis with sciatic pain and in spite of excellent bony lumbosacral fusion by bone graft the sciatic pain persisted.

feel not only that they are causes of sciatic pain, but that they may be causes of lumbosacral pain with or without sciatic pain. Particularly those patients who complain of sudden onset of pain low in the back, brought on by some activity, often trifling in its severity but usually involving a twisting or rotary strain of the lumbosacral region, are, in all probability, usually victims of the "facet syndrome." These patients often present sciatic scoliosis, which may be homolateral, contralateral or alternating. With the onset of sciatic scoliosis, muscle spasm sets in, and thus, although splinting in action, forces the irritated surfaces of the facets together more firmly. Until this muscle spasm subsides or some change in position of the surfaces of the facets takes place, as by manipulation, the pain may persist. Actual sciatic pain may or may not be present at once. It often appears later in the disorder to complete the facet syndrome.

In those cases in which the roentgenogram reveals narrowing of the fifth lumbar intervertebral space, with consequent flattening of the disk, much abnormal strain must be thrown on these facets. It is obvious that, with narrowing of the disk, overriding of the surfaces of the facets must take place. This can be demonstrated by oblique views of the lumbosacral region. With this abnormal contact, traumatic arthritis is likely to be set up, which in time must produce symptoms not only of lumbosacral pain but of sciatic pain as well. In fact, the sciatic pain in these cases seems more likely to be caused by pressure on the nerve or nerve sheath exerted by the facet than by the intervertebral disk. It is possible, too, that the surfaces or margins of the facets may be fractured by undue stress or strain. In some cases seen at the Mayo Clinic (fig 1) it has been possible to obtain roentgenologic evidence of such marginal changes in these articulations as could come

about only through fracture of the margin of the joint, such as can be seen occasionally in any of the smaller joints. The mechanical strain placed on these surfaces when the spinal column is forcibly hyperextended must be great, such traumatic changes probably are present in many more instances than heretofore have been recognized.

ROENTGENOLOGIC EVIDENCE

The satisfactory demonstration of changes in the articular facets has not been possible until recently. Kirklin and I¹⁰ have presented a method of demonstrating these changes which seems to us much more satisfactory than any method heretofore used. Anteroposterior views of the lumbar and lumbosacral portions of the spinal column may show the facets of the upper lumbar vertebrae clearly, but the facets between the fifth lumbar vertebra and the sacrum are usually so placed that they do not show clearly in an anteroposterior view. The same is often true of the facets between the fourth and fifth lumbar vertebrae. Stereoscopic roentgenograms of this region, however good, often leave one dissatisfied as to the changes that may have taken place in the facets. The views already referred to as oblique views, or three quarter views, show the joint space between the articular facets clearly. In instances in which there is anomalous place-

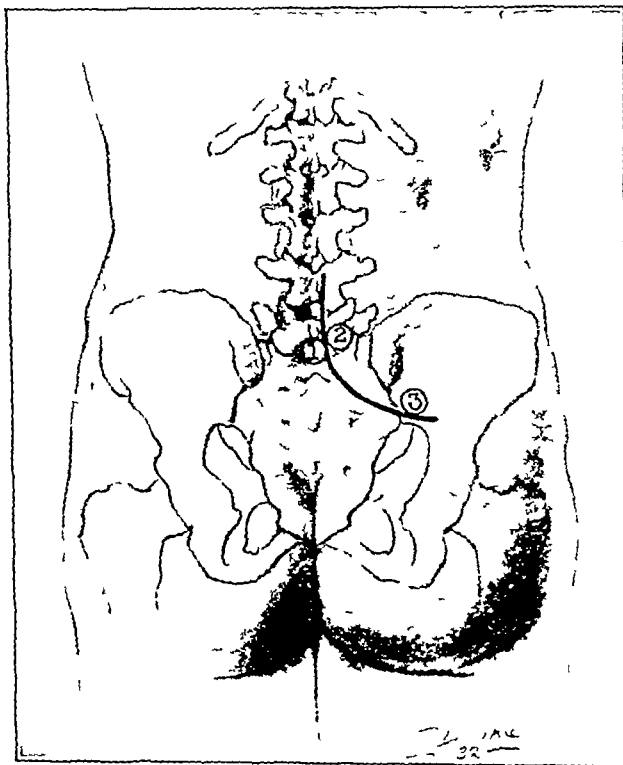


Fig 4—Characteristically tender points of the lumbosacral region. 1. lumbosacral arthritis with narrow disk. 2. the same with predominant changes in the facets. 3. sacro-iliac tenderness. The curved line indicates the usual incision for combined lumbosacral and unilateral sacro-iliac fusion.

ment of structures little can be told even from oblique views but when the structures are in their usual situation one can accurately determine the presence of irregularities in the joint space as well as changes along the margins of the facets.

⁹ Williams, P. C. Reduced Lumbosacral Joint Space. *J. A. M. A.* 89: 16-1652 (Nov. 12) 1932.

¹⁰ Ghormley, R. A. and Kirklin, B. R. The Oblique View for Demonstration of the Articular Facets in Lumbosacral Backache and Sciatic Pain to be published.

TREATMENT

Treatment of this condition may be said to fall into two categories. If the condition has been present a short time only, and if no treatment of any consequence has been given, conservative measures, such as recumbency, with or without traction on the lower extremities, physical therapy, and possibly epidural injection of anesthetic substances are advocated. This entire subject has been covered in a recent article by Craig and

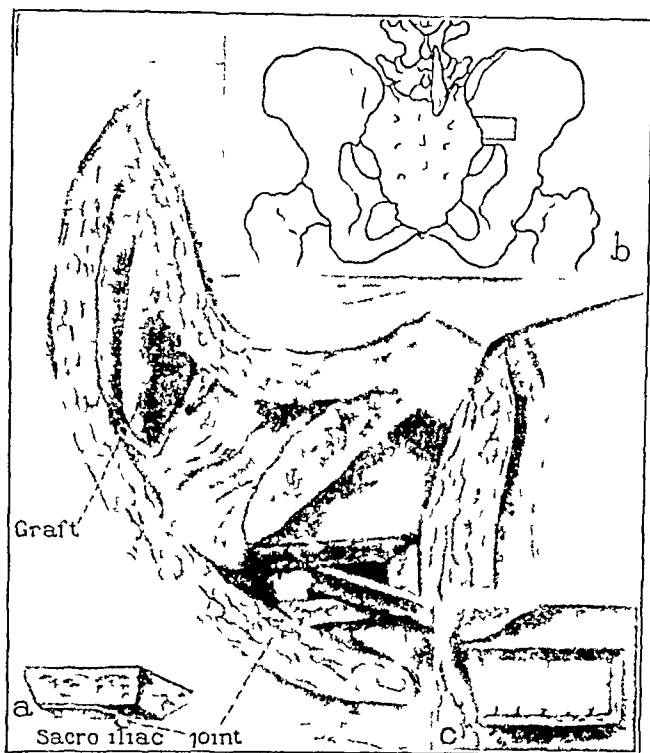


Fig. 5—Combined lumbosacral bone graft and sacroiliac fusion operation showing the lumbosacral bone graft in place. The Smith Petersen fusion of the sacroiliac joint showing exposure of the joint with removal of its cartilaginous surfaces. *a*, the piece removed to expose the sacroiliac joint; *b*, position of plug and lumbosacral bone graft from posterior iliac crest; *c*, the plug countersunk.

me.¹¹ Our paper dealt particularly with sciatic pain. In many of the cases considered in the present article, sciatic pain is the main symptom, so that cases of the sort considered here made up a fairly large proportion of the cases studied by Craig and me. If conservative measures do not bring relief, it is necessary to choose one of the following: further conservative treatment, more radical measures, such as manipulative procedures or long recumbency in plaster casts, or ultimately radical operation. I feel that a comparatively small group of patients are amenable to surgical treatment. One can pretty safely assure the patient that in time he will be relieved by conservative types of treatment. But in many instances the period of time over which the patient may suffer from recurrent attacks of low back pain, with or without sciatic pain, is so prolonged as to make surgical procedures of real value, provided they leave the patient sufficiently improved to justify them.

It has been my experience that younger persons who have well established recurrent backache of this type are likely to have a very prolonged period of recurrent attacks. Among older persons, the tendency seems to be toward gradual lessening of the severity and frequency of the attacks, probably because of the natural

process of ligamentous and articular change which accompanies age. Hence, it is best, usually, to select only younger patients for surgical treatment.

Failure of conservative treatment alone should not be an indication for operative treatment in these cases. In a general way, it may be said that operation is justified only in the following circumstances:

1 The patient must have persistent pain low in the back, with or without sciatic pain or recurrent attack over a period of months.

2 The pain must be consistently localized over a definite area, with tenderness on pressure over either the lumbosacral joint—that is, the space between the fifth lumbar spinous process and the first sacral spinous process, or laterally in the region of the lumbosacral articular facets—or he must have tenderness over one or both sacro-iliac joints. This tenderness is localized along the upper border of the sacrosciatic notch, which is directly over the sacro-iliac joint (fig. 2). Such tenderness may be found also in the presence of lumbosacral lesions, in which event pain along the superior gluteal nerve is common. This makes the differential diagnosis between these conditions very difficult at times.

3 Narrowing of the disk between the fifth lumbar vertebra and the sacrum must be demonstrated in the lateral roentgenogram.

4 Obliterative or destructive changes in the intervertebral articulations must be demonstrated by the oblique roentgenograms of the lumbosacral region.

5 The central nervous system should have been examined and found negative, except for such evidence of irritation of nerve roots, or of pressure on them, as can be noted in many of these cases.

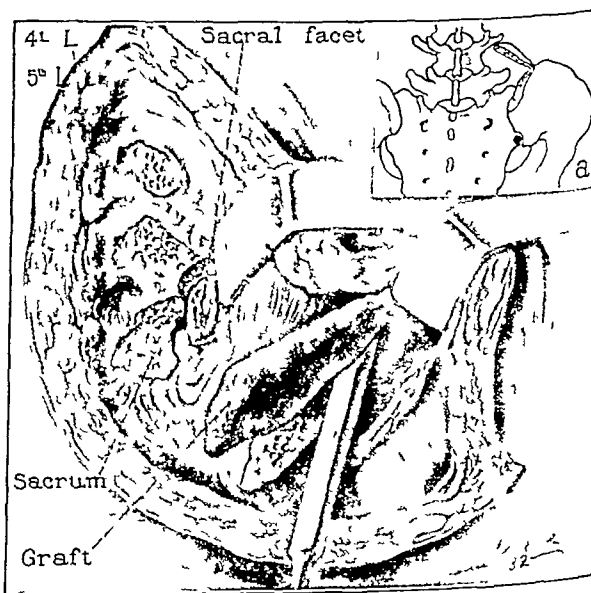


Fig. 6—Preparation of the bed for the lumbosacral bone graft and the method of removal of the graft. A portion of the articular facet has been excised to break the bony wall of the intervertebral foramen.

With these conditions satisfied, one may consider operative treatment with a fair assurance of success, but the importance of the presence of these factors cannot be emphasized too much. If the pain low in the back is caused by disturbances in either the lumbosacral or sacro-iliac joints, or both, fusion of these joints should relieve the pain. If the sciatic pain is the result of diminution in the size of the foramen of exit of the

11 Craig, W. McK. and Ghormley, R. K. The Significance and Treatment of Sciatic Pain. *J. A. M. A.* 100: 1143-1149 (April 15) 1933.

fifth lumbar nerve root, enlargement of that foramen should relieve the pain

OPERATION

The type of operation chosen in these cases is, of course, important. Production of lumbosacral ankylosis by bone graft or bony fusion cannot always be depended on to relieve these patients. In some cases even in which there was unquestionably excellent bony fusion or ankylosis, sciatic pain persisted, thus, in spite of the fact that apparently the lumbosacral lesion was the original cause of the backache (fig 3). Removal of the facet resulted in relief of the sciatic pain. Such procedure alone can rarely be risked as a cure for sciatic pain. I¹² have reported a case in which removal of a portion of the articular facet, thus enlarging the foramen of exit of the nerve, resulted in cure of severe sciatic pain. Recently the patient wrote that he had remained well. The day may come when it will be possible to select all the patients whose trouble lies solely in the facet and who can be cured by its partial or complete removal. However, in the light of present knowledge, bony lumbosacral ankylosis must be produced, and, at the same time, sufficient bony and cartilaginous material resected from one facet or from both to remove a portion of the bony wall of the foramen through which the nerve root passes. Perhaps in many cases ankylosis of these joints will produce the desired result. I believe this is true in those cases in which backache only is the predominating symptom, but if sciatic pain is present in addition to the backache, in most instances enlargement of the foramen is essential, and this can be most easily accomplished by excision of the articular facet.

A review of the literature on operative treatment of low back pain discloses that seven distinct operative procedures have been in more or less constant use. They may be grouped as lumbosacral or sacro-iliac operations or as combined fusion operations. The lumbosacral operations most often used are the Hibbs operation, the trisacral fusion operation of Chandler, and the many modifications of Albee's application of bone transplants from the tibia. Smith-Petersen, Campbell, Gaenslen and Verrall have devised operations designed to stabilize the sacro-iliac joint. All these operations have their advocates.

If operative treatment has been selected, the attempt should be made to determine exactly whether the pain is sacro-iliac or lumbosacral. Criteria for selecting patients for operative treatment have been laid down in this paper. If the symptoms cannot be satisfactorily localized to one joint, two or even all three joints may be treated by operation. In examining patients there are many helpful tests and signs, notably, raising of the straight leg, flexion of the thighs on the abdomen, Goldthwait's sign, Gaenslen's sign, and so forth. However, no sign is so consistently informative as elicitation of tenderness on point of pressure. It is of value to be able to demonstrate this tenderness, consistently localized on several examinations at varying intervals. Any case in which tenderness shifts is not a case for operative treatment.

When the joints that are to be fused have been determined the incision indicated in figure 4 is employed except in cases in which both sacro-iliac joints, as well as the lumbosacral joints, are to be subjected to opera-

tion. In these cases a transverse incision is used, curving upward, starting at one sacrosciatic notch and extending across the lumbosacral region to the opposite notch. With the exposure of the lumbosacral area either the surfaces of the facets are excised or fused, and the laminae and spinous processes of the fifth lumbar vertebra and first and second sacral segments are freshened. Then, starting at the posterior superior spine of the ilium, the iliac surface is denuded of periosteum and muscular attachments are denuded, down to the superior margin of the sacrosciatic notch. Fusion of the sacro-iliac joint is then effected after the method of Smith-Petersen¹³ (fig 5). Finally a graft of bone is taken from the posterior aspect of the iliac crest including most of the posterior superior iliac spine, this graft is placed in the bed prepared for it, between the fifth lumbar vertebra and the sacrum (fig 6). Such a graft, I think, brings about ankylosis much more quickly than those taken from the tibia. Experimental work, as yet not published has proved this.

The patient is kept on a firm bed, and a Bradford frame is used. A scultetus binder is the only device for fixation applied over the dressing. After twenty-four hours the patient's position is changed from prone to supine every six hours. After five weeks he is allowed to turn himself, and after six weeks he is allowed to be up, wearing a wide canvas body support or corset. Limited activity for two to three months more is prescribed, roentgenograms are taken at the end of four months from operation.

SUMMARY

Pathologic changes in the articular facets underlie many cases of pain low in the back, particularly those in which are present the symptoms here referred to as the facet syndrome. Proof of these changes is in many instances difficult to secure, but much aid in establishing such a diagnosis will be derived from the use of oblique roentgenograms of the lumbosacral region. Before operative treatment is decided on, the surgeon must be certain of the joints to be stabilized or the result may be poor. Combined lumbosacral and sacro-iliac fusion, such as has been described, has proved much more satisfactory than any other type of operative procedure.

13 Smith Petersen M. N. and Rogers W. A. End Result Study of Arthrodesis of the Sacro Iliac Joint for Arthritis—Traumatic and Non traumatic. *J. Bone & Joint Surg.* 8: 118-136 (Jan.) 1926

The Physiognomy of Disease—There is a very genuine study in what may be called the physiognomy of disease. Among the more striking and specific physiognomies we include the mitral facies, with its malar hyperemia and dark crimson lips its varying tints of purple and when failure is advanced and the liver engorged its underlying icterus. The drawn, pale anxious gray-lipped hippocratic facies of peritonitis with 'sharp nose and hollow eyes' is fortunately much rarer than it was thanks to the surgeons. And so is the risus sardonicus of tetanus. The broad thick-lipped impassive face of myxedema with the cheeks tinted a delicate rose purple as Gull described it, a slight underlying waxiness, a smoothness of the skin and the receding hair margin and scanty eyebrows is very characteristic but I have known it when inspection was too superficial mistaken for that of mitral disease nephritis and pernicious anemia. The anxious face of hyperthyroidism with prominent eyes and bulging neck presents no difficulties in the well developed case but I have often had cases referred to me in which the cause of a tachycardia or a breathlessness a nervousness or a loss of weight had passed undetected because slight and early eye signs or the fine tremor of the extended fingers had not been observed.—Ryle I. A. The Training and Use of the Senses in Clinical Work, *Guy's Hosp Gaz.* 47: 421 (Oct. 28) 1933

1. Ghormley, K. K. The Operative Treatment of Painful Conditions of the Lower Part of the Back. *Proc. Staff Meet. Mayo Clinic* 6: 114-115 (Oct. 29) 1931

TRAUMATIC BACKACHE

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Traumatic backache, although not an ideally scientific term, describes clinically a condition familiar to every orthopedic surgeon. A great many articles have been written about backache, but much of the literature is of a general nature without particular regard to specific points of diagnosis and treatment. Since it has been found that a high percentage of these traumatic backs recover under a definite yet simple although perhaps not an original method of handling, it would seem worth while to make this report.

In traumatic back injuries, wherein the predominating symptom is that of pain, there may be a division into three or possibly four classes:

First, those occurring from traumatism on top of a pre-existing arthritis of the spine and pelvis.

Second, those due to traumatism of the soft parts of the back such as muscle, tendon, ligamentous or periosteal tissue.

Third, cases with a predisposition to injury due to faulty posture.

Fourth, cases caused by occupational strain—such as heavy lifting.

This type of traumatic backache has been estimated by Miltner and Lowendorf,¹ in a summary of 2050 cases of lower back pain, to be present in 30 per cent of this number.

It is assumed that not all traumatic back cases will necessarily fall under one of these specific headings. Many cases may be a combination of one or two or even three of these classifications. It is important, however, that the predominating symptoms be brought out and properly classified so that suitable treatment may be instituted. It is recognized, for example, that traumatism may stimulate arthritis of the spine, and it is also conceded that a patient with a traumatic back having predisposing arthritis symptoms is also retarded in recovery if there is an attendant faulty postural strain.

Out of a hundred cases of traumatic backache, Yeoman² reports seventy-seven men as against twenty-three women. The average age was 44, the youngest patient was 18 and the oldest was 72. In my series of fifty cases of backache caused by traumatism there were twenty-four men and twenty-six women. The average age was 38.1, the youngest was 17 and the oldest was 68 (table 1).

In carefully studying the anatomy of the lower part of the back, it would seem from a purely mechanical standpoint that the method of construction is erroneous, for it would seem that nature has put the keystone of the arch of the lower part of the back upside down and has allowed the entire load to come on this inverted keystone. On the other hand, it is known that the lower part of the back is a shock absorber, and, if taken from this standpoint, it is seen that the pelvis and lower part of the spine are ruggedly built. According to Chamberlain's³ method of computation, the male pelvis is normally capable of only one-half to one-third the mobility of the normal nonpregnant

female pelvis. He points out, however, that, when involved, the male pelvis is much more troublesome and the discomfort is more marked than that of the female subject. It is quite obvious that, owing to occupation and to increased opportunities for traumatism, traumatic backache is more prevalent in the male.

As a general thing, according to Ryerson, the younger patients are more apt to have mechanical instability, while the older patients have an arthritic process, which renders the joints more vulnerable to traumatism.

In a true case of arthritis of the spine, in which there has been no history of injury, there is often a history of pain beginning in the lower part of the back and referred to the buttocks and thighs. As a rule there is a loss of the normal anterior-posterior lumbar curve, and there is usually definite limitation of the normal motion of the spine. Often there is attendant muscle spasm and neuritic signs. The diagnosis may usually be made from these symptoms alone, but it is always more conclusive to have a roentgenogram. This usually shows definite hypertrophic bone changes.

In traumatic backache, the seriousness of the condition may grade all the way from a soft tissue strain up to an actual fracture of the vertebral bodies or contiguous structures. The serious type of fracture is, of course, not to be included in this paper, but slight cases of check-fractures or unrecognized fractures brought out by carefully taken roentgenograms are rather common and are definitely contributory to the disability of the patient.

Sprains of the back in varied states of severity and symptoms are very common. The symptoms may be at once present, or they may come on some time after the accident. Their usual causes are violence, coming from an extraneous source or the overstretching of a

TABLE 1—Fifty Cases of Backache Caused by Traumatism

Number of males	24
Number of females	26
Average age	38.1
Number under 20	4 per cent
Number between 20 and 40	62 per cent
Number between 40 and 50	18 per cent
Number over 50	16 per cent
Results of nonoperative treatment	66 per cent
Complete relief	34 per cent
Partial relief	
Results of operative treatment	8 cases
Complete relief	1 case
Relief from pain, refuses to work	
Average duration of symptoms	30 months
Average duration of treatment before being relieved	6.3 months

muscle or tendon, due to unnatural strain or stress. These traumatic back injuries are most frequent in the lumbar region. Second in frequency is the cervical spine, then the dorsal spine, which is the least flexible and the least liable to injury.

The symptoms involved in a case of traumatic backache are, first of all, pain, with usually a history of a blow, a strain or a fall. If the condition is primarily muscular, the pain is intensified when that group of muscles or single muscle is strained. This may be brought out by the fact that, when the back is moved in one direction or another, the pain is increased, and usually there is attendant muscle spasm. In most cases, standing is very painful, in still other cases, it is impossible for the patient to remain seated, so that in any position that he may assume he is most uncomfortable. Often there is discomfort following coughing or sneezing. Riding in an automobile is many times unbearable.

Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Miltner, L. J., and Lowendorf, C. S. Low Back Pain. A Study of 525 Cases of Sacro-Iliac and Sacrolumbar Strain. *J. Bone & Joint Surg.* 15, 16-28 (Jan. 1931).

² Yeoman, V. Relation of Arthritis of Sacro-Iliac Joint to Sciatica with Analysis of 100 Cases. *Lancet* 2, 1119-1122 (Dec. 1) 1928.

³ Chamberlain, W. E. X-ray Examination of Sacro-Iliac Joint. *Dela-ware State M. J.* 4, 195-200 (Sept.) 1932.

This pain may be localized or referred. In some cases, the pain is severe enough to resemble a true case of sciatic neuritis, but the condition may be differentiated by bringing out the fact that the pain is rarely that of the peripheral nerves but rather along the course of the distribution of the nerve roots.

Smith-Petersen⁴ classifies the local site of pain as in table 2.

TABLE 2—Site of Pain

	Per Cent
The region of the inferior sacro iliac ligaments and the greater sacro iliac notch	100
Subjective areas of radiation	
Posterior aspect of the thigh	89
Posterior aspect of the leg	81
Along the course of the superior gluteal nerve	23
Lower mesial aspect of thigh	12

He further reports areas of tenderness as in table 3.

TABLE 3—Areas of Tenderness

	Per Cent
Inferior sacro iliac ligaments and greater sciatic notch	100
Distribution of subgluteal nerve	23
Sciatic nerve trunk	27
Lumbosacral region	3.2

In most low backaches caused by traumatism, in addition to the pain there is a definite pelvic list or attitudinal posture (fig 1). The pelvis appears more prominent on one side than on the other. As a rule, the list is away from the side affected. In Smith-Petersen's group there was a pelvic list in 72 per cent of the cases, and of this number the list was toward the side of the lesion in 32 per cent and away from the side of the lesion in 40 per cent of the cases. In addition to this symptom there is usually referred pain down the posterior aspect of the thigh on the side opposite the direction toward which the pelvis lists.

With the patient standing in the position assumed in figure 1 there is an apparent shortening of the extremity on the side toward which the pelvis is listing. Almost all directions of back bending are limited, but particularly in a direction away from the side of the pelvic list. Usually the straight leg raising test as described by Goldthwait,⁵ when applied on the concave side of the pelvic list, is decidedly limited and causes pain over one or both of the sacro-iliac joints. This pain may sometimes be localized over an area parallel to the lumbar spine, extending laterally, 2 or 3 inches from the midline of the spine.

There are a number of tests devised by different authorities which definitely help, more or less, to localize the site of the low back pain. These tests are important in the differential diagnosis. Among these is forcible compression of the sacro-iliac joints, which will often elicit pain in the affected joint. This can be done either by direct pressure of the examiner's hands over the crests of the ilium or by placing the examiner's knee over the sacrum and forcibly pulling backward over the region of the anterior superior spines.

Smith-Petersen especially emphasizes the symptoms elicited in bending over while the patient is standing.

⁴ Smith-Petersen, M. N. Clinical Diagnosis of Common Sacro-Iliac Conditions. *Am J Roentgenol* 12: 546 (Dec.) 1924. Routine Examination of Low Back Cases with Particular Reference to Differential Points Between Lumbosacral and Sacro-Iliac Regions. *J Bone & Joint Surg* 6: 819 (Oct.) 1924.

⁵ Goldthwait, J. F., and Good, R. B. A Consideration of the Pelvic Articulations from an Anatomical, Pathological and Clinical Standpoint. *Fraction M. C. S. J.* 1: 52 (Oct.) 1905.

sitting or lying. He emphasizes the importance of these various positions as a means of differentiating between lumbar and sacral conditions. With the patient standing, the back is first flexed, then the pelvis is tilted until the hamstrings become tight. The site of the pain will, as a rule, be easily localized by the patient. In the lumbosacral case, forward bending of the back is possible but the tilting of the pelvis is resisted. In the sitting position, the patient with a sacro-iliac joint trouble can usually bend forward quite easily. The same may be said of flexion with the patient lying on his back.

Gaenslen advocates the following procedure. With the patient lying flat on his back, the thigh and knee of one lower extremity are fully flexed. This extremity is held in this position by the patient. The other lower extremity is held fully extended, and pressure is made on the knee. Pain will be demonstrated in the affected sacro-iliac joint.

The Laqueur sign consists of forcing the leg into flexion, abduction and outward rotation, causing pain in the sacro-iliac joint involved.

In Yergason's⁶ chair test the patient is asked to step up onto a chair, with the unaffected leg and without aid. His attention is taken up with the act and if he is malingering he may complain of pain in that leg, whereas a patient with real sacro-iliac joint trouble cannot step from the affected extremity or sacro-iliac joint without pain.

In cases of traumatic arthritis, unless there has been a preexisting arthritis, the roentgen examination is usually negative. Many times there is thickening of the soft tissues about the sacro-iliac joints, and pressure in this area causes pain. If the condition is unilateral, and this many times is the case, the test brought out by Carnett⁷ can be satisfactorily applied. He believes that the pinching of a liberal fold of skin and fat between the examiner's thumb and one or two fingers is the best method of examining for tenderness. In a normal individual the maximum pinching pressure causes only slight discomfort and not actual pain. In tender areas a mild pinch may cause severe pain. Patients cannot estimate the force of the applied pinch, and their erratic responses quickly reveal the malingerer to the examiner.

In the great majority of cases of back injury, pain and tenderness involve one or both sides of the lowermost part of the abdomen. This region is supplied by the hypogastric and ilio-inguinal nerves. In addition to supplying the lower part of the abdomen both these nerves send sensory filaments to the buttock. The ilio-inguinal nerves supply an area about 1½ inches in width, superficial to and parallel with Poupart's liga-

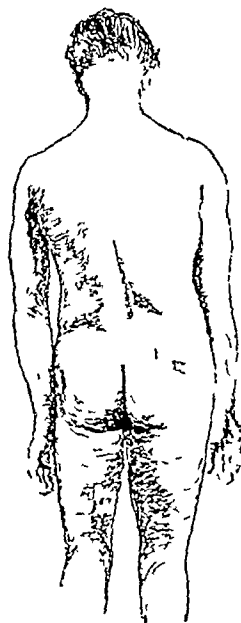


Fig 1—Right pelvic list.

⁶ Yergason, R. M. Diagnostic Sign in Examination of Affections of the Sacro-Iliac Joint. Chair Test. *J Bone & Joint Surg* 11: 116 (Jan.) 1932.

⁷ Carnett, J. B., and Bates, W. Railway Spine. *S. Clin. North America* 12: 1369 (Dec.) 1932.

ment, and likewise a V-shaped area at the uppermost inner aspect of the thigh. If any one of these areas is tender, all four will be found to be hypersensitive. Spontaneous pain is present only in the abdominal area in the majority of patients but a small percentage of patients may complain of pain in one of the three other areas. Very few patients have pain in all four areas. The malingerer is not familiar with the interdependence of tenderness in these four areas and the finding of tenderness in all four areas even when pain is present in only one, promptly establishes the patient's claim as real and not fictitious.

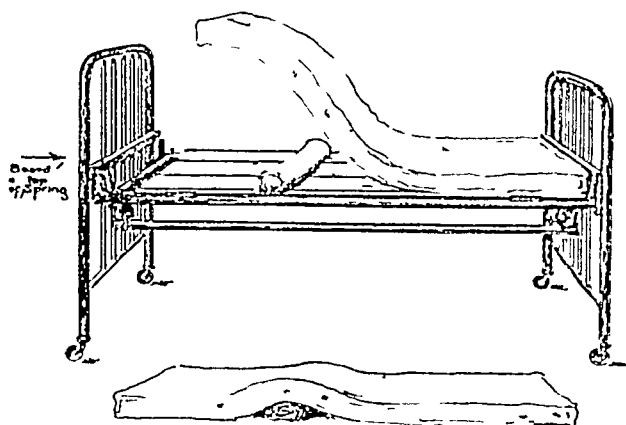


Fig 2—Method of making fracture bed with hyperextension roll

It must be remembered that, in injuries to the back, the condition may be attended by symptoms that are more widespread, serious and undermining in character than those injuries attendant to any other joint. For example, an injury to the knee may be attended by localized swelling and pain and limitation of motion, but under routine treatment of rest and, later on, heat and massage, the joint symptoms usually subside and the patient is able to get back to his former duties without incidental interruption. In the back, such a convalescence is not the routine program. A similar injury affecting the back may be attended by a great deal of pain and limitation of motion. Such a condition rapidly assumes a chronic state, and these cases commonly appear in lawsuits. One has only to "listen in" at the bar to realize just how little is known of a specific nature about this condition.

In the differential diagnosis of traumatic arthritis of the back, there are certain conditions which must be eliminated first. One of the most important things to eliminate is a fracture, and this can be done definitely by means of a clear-cut roentgenogram. There may have been a preexisting hypertrophic arthritic condition, and this also may be eliminated by means of a roentgenogram. The fact that there has been a preexisting arthritis of the spine does not preclude the diagnosis of traumatic arthritis of the back, because, although there may have been a bony hypertrophy, the traumatism will have caused an acute arthritis on top of a chronic condition, affecting the soft tissues, such as the periosteum and surrounding tendons and muscles, in such a way as to produce a localized inflammation with the symptoms previously described.

The treatment in the case of traumatic arthritis of the back should be specific and definite and follow a regulated course.

The prognosis as to recovery of these backs should be as good as it is in other joints, provided the attend-

ing conditions that may contribute toward the physical observations are eliminated. Foot strain is one of these contributing factors, and support should be prescribed when indicated. It is important to eliminate focal infection as a factor. There is little need of bailing out the boat unless the leak can first be stopped.

So far as direct treatment is concerned, manipulation of these backs has been done by several well known men. Ryerson states that so many patients have reported immediate relief after manipulations that their worth cannot be discounted. The most common method is that described by Baer⁸ and is done under an anesthetic with the patient flat on his back. The leg is extended on the thigh, and the lower extremity, moving as a unit, is forcibly flexed at the hip.

TECHNIC OF TREATMENT

The following method of treatment has met with an appreciable amount of success.

First of all, the patient is placed on a fracture bed, preferably in a hospital. Such a bed may be made by taking three boards 10 inches wide seven-eighths inch thick and 5 feet 10 inches long fastened together side by side by means of two cross cleats. This board arrangement is then placed lengthwise on the springs of the bed, and the mattress is placed on top of the boards (fig 2). This will make a bed with firm and positive support. The foot of the bed should then be raised 6 inches from the floor. Buck's type of extension should be applied to both legs. In the case of an adult female, an 8 pound weight is used on each leg. In the case of an adult male, a 12 pound weight is used. Instructions are given to the effect that if the patient is unusually restless these weights may be raised for half an hour from time to time.

The patient is allowed to turn on his side for a change of position, but for the most part he is urged to remain on his back, in order to get the maximum amount of positive support and immobilization. Under no circumstances except for unusual conditions is the patient allowed bathroom privileges. This position is maintained for a period of two weeks. At the end of this time a plaster-of-paris cast is applied with the patient resting on a modified Goldthwait hyperextension frame (figs 3 and 4). The cast is spical and extends from the armpits down to the knee on the side of the referred pain. By holding the back in hyperextension the maximum amount of immobilization is obtained and the position acquired while the patient has been lying in bed is approximately maintained.

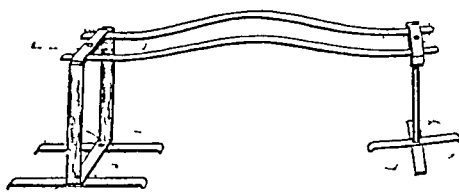


Fig 3—Modified Goldthwait hyperextension

When the patient has become partially accustomed to the cast, he is allowed out of bed for a limited time, these periods of freedom are gradually increased as the patient becomes stronger. The cast is kept on for two weeks and in some very severe cases the time is extended to three weeks. The cast is then removed and the back is strapped with adhesive tape. The back brace or corset made from measurements previously taken is applied over this strapping. The adhesive tape is allowed to remain on for four or five days and is then reapplied. A baking and light massage is given between strappings. At the end of two weeks the adhesive tape is finally removed and mild exercises are begun. These exercises are gradually increased in severity and scope.

The patient should continue to sleep on fracture boards similar to those used in the hospital for at least six to eight months

There are certain cases of backache which will not respond to this or any other form of conservative treatment, and it is not advisable to persist in such treatment indefinitely. An operation designed to fuse the bony site of the localized back pain must be considered.

The Smith-Petersen operation is perhaps the most commonly known. This consists in the removal of a rectangular piece of bone crossing the ilium and sacrum and wedging the sacro-iliac joint. This joint is destroyed by curettage or erosion, and the rectangular piece of bone is wedged back in such a way as to cross the joint with cancellous bone. The countersunk block is further secured, and osteogenesis is promoted by turning down flaps of bone from the edges of the window.

Gaenslen advises the division of the posterior third of the ilium into an outer leaf, which is reflected laterally with the muscles attached, and an inner leaf which remains standing. A triangle is marked out on the remaining leaf within the articulating area of the sacro-iliac joint. The joint is eroded, bone fragments are packed into the triangle, and the outer leaf of bone is replaced and sutured.

Campbell⁹ advocates an extra-articular fusion, in the belief that such an operation is less likely to lead to infection.

The fusion of one sacro-iliac joint often does not entirely relieve the patient of pain, and the fusion of both the sacro-iliac joints as well as the lumbosacral junction has been found necessary in not a few instances. This operation is done through three separate incisions, one over each of the sacro-iliac joints and one over the lumbosacral junction. The technic is that recommended by Smith-Petersen. The graft used over the lumbosacral junction is an osteoperiosteal graft, taken either from the crest of the ilium or from the flat internal surface of the tibia.

After operation these patients are placed on a Bradford frame. No cast is applied. They are kept in bed for two months. At the end of this period they are given a brace and allowed out of bed gradually. The postoperative care relative to physical therapy, exercises and the like is much the same as that outlined for the conservative treatment of traumatic backache. The number of patients requiring operation has been found to be comparatively small, for, if the conservative treatment is carried out conscientiously, many of the cases in which it is anticipated that an operation may be necessary will respond so well as to make an operation superfluous. In my series of traumatic backs only nine patients came to operation.

CONCLUSION

My reason for outlining a definite program of treatment for traumatic backache is that the response of and relief to the patient has been extremely gratifying.

REPORT OF CASES

CASE 1—Miss M. R., aged 54, seen in February, 1931, complained of pain in her back which she had had since January of that year. The pain came on suddenly while the patient was doing esthetic dancing. She was in bed for a week. She saw an osteopath who said there was a partial slipping of one

of the vertebral bodies. She had light treatment and the back was manipulated, but at the time of this treatment the pain was much worse.

Physical examination revealed that there was a definite pelvic list to the left with an attendant scoliosis. All back motions were limited. The Lasegue sign was one-half normal and painful. The patient had had a recent tonsillectomy. The pelvis had been reported normal and she had had a recent dental examination.

She was hospitalized on a fracture bed with traction on both hips. This treatment was followed by the application of a cast, and following this she had strapping of her back, wore a belt, and had baking, massage and exercises. Active treatment was kept up for seven months and then she was shown exercises which she did faithfully.

Examination in February, 1933, revealed that she had no back deformity and no pain. She is able to do her regular work and to continue her esthetic dancing. The patient was dismissed as having recovered.

CASE 2—Mrs. P. C., aged 44, seen in January, 1930, complained of pain in the back which she had had for three weeks, referred down her left thigh and leg. The pain came on suddenly as a result of a strain from lifting. She had had local applications of heat and local massage. She had had recent dental attention. There was no tonsillitis, and examination revealed normal tonsil tissue.

Physical examination revealed a positive Lasegue sign on the left. There was a definite pelvic list to the left and all back motions were definitely limited.

The patient was hospitalized on a fracture bed with traction on both legs. Following this treatment a cast was applied. After the removal of the cast a corset back brace and strapping

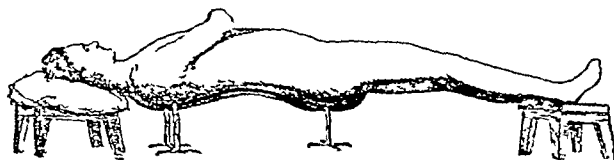


Fig. 4—Patient on hyperextension frame ready for application of a cast.

were applied. Physical therapy was carried on for a time. The back improved but later on began to get progressively worse. Six months after her first visit her back was fused, the Smith-Petersen technic being used to fuse both sacro-iliac joints and the lumbosacral junction. She had an uneventful convalescence.

Examination made in February, 1933, showed that there was absolutely no pain in the back and there was normal motion. She was able to follow her regular occupation as a housewife.

CASE 3—H. B. R., a man, aged 27, seen in May, 1931, complained of pain in the back referred to the right hip and right lower extremity. The patient had had a tonsillectomy two weeks prior to this examination. Pain came on following an injury due to a strain while working on a building.

Physical examination showed a pelvic list to the right with a resulting scoliosis. There was a positive Lasegue sign on the right.

The patient was placed in the hospital on fracture boards with traction to both legs. Following this a cast was applied and then a corset brace. He was shown exercises and given physical therapy. The back did not improve as rapidly as was anticipated. He consulted another orthopedic surgeon and had the lower extremity manipulated. His back still continued to ache. The pelvic list became worse so that in April 1932 the back was fused the Smith-Petersen technic being used and both sacro-iliac joints being fused as well as the lumbosacral junction. He made an uneventful recovery.

Examination made in April 1933 revealed that his back motions approach normal. He has absolutely no pain, and he has returned to work.

CASE 4—Mrs. K. P., aged 50, seen in April, 1930, complained of pain in her back running down the back of her right thigh and leg. She had had this pain for five months, and it had

⁹ Campbell, W. C. Operative Measures in the Treatment of Acute and Chronic Lumbosacral and Sacro-iliac Articulations. Surg. Clin. N. A. 5:1 (Sept.) 1911.

come on suddenly as the result of a fall. She had had osteopathic treatment and had been in bed. Her teeth had been extracted and she had no history of tonsillitis.

Physical examination revealed that she had a pelvic list to the right. All back motions were limited. She had a positive Lasgue sign on the right.

The patient was placed in bed on fracture boards with traction to both legs. Later a cast was applied. Following the removal of the cast a corset brace was applied and she was instructed in the use of bracing and massage. Her convalescence was slower than usual, but at the time of the last examination, which was in March, 1931, she was able to do all her housework. There was no back deformity, no pain and no limitation of motion.

CASE 5—M. S., a man aged 28, seen in October 1930, complained of pain in the back running down the posterior surface of the left thigh. This came on as a result of an accident four years prior to this examination. He had had his tonsils out and his teeth had been recently examined.

The patient stood with a definite pelvic list to the right. All back motions were limited. He had a positive Lasgue sign on the left and he stood with pronation of both feet.

He was equipped with supports for his feet. He was hospitalized on fracture boards with traction to both legs. Later a cast was applied. On removal of the cast he was fitted with a back brace. He was given exercises, bracing and massage. Later he went South for some sun exposure. He continued to sleep on fracture boards at home.

In September, 1932, when examined he had no pain. He had returned to work as an automobile salesman and had no back deformity.

CASE 6—D. G., a man aged 24, seen in May 1929, complained of pain in the back coming on as a result of an automobile injury. He had been hospitalized prior to this examination.

Physical examination revealed a definite pelvic list to the right with limitation of all motion of the back. The straight leg-raising test was limited on the left. His feet were slightly pronated.

The patient was placed in bed on fracture boards with traction to both legs. Later a cast was applied and following the removal of the cast a pelvic back brace was fitted. He was given exercises, bracing and massage and at the time of his last examination in February, 1933, he had absolutely no pain and had returned to his former occupation as a milk carrier. There was no deformity.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. GHORMLEY AND JEPSON

DR. HENRY W. MEYERDING, Rochester, Minn. I should like to say a few words which I hope will be of service to general practitioners. When examining injured backs, the first essential is to disrobe the patient, so that careful inspection and palpation can be carried out. The patient then should be made to try to bend forward, backward, to the right and to the left, with the knees and hips stiff, while the hands of the examiner palpate for muscle spasm, deformity and tender areas. Formerly, anteroposterior roentgenograms of the spine were considered adequate, but for some years my colleagues and I have felt that lateral views are of great importance. Impacted fractures, spondylolisthesis, and injury to the intervertebral disks have been much more readily detected in lateral views. As was shown so expertly in the slides presented by Dr. Ghormley, another aid is available in the three quarter roentgenograms which reveal the articular facets and sacro iliac joints so well. In classification Dr. Jepson might well include a group of congenital anomalies which exist in the lumbosacral region, and which are associated with traumatic backache. In my recent studies of spondylolisthesis I was able to illustrate a great number of such deformities, which result in weakness of the lumbosacral joint when stress and strain on this region take place, giving rise to symptoms of medicolegal importance. The unrecognized compression fracture seen to occur so frequently from jars and jolts incurred in modern fast automobile driving must also be considered. Hernia of the nucleus pulposus and

injury to the intervertebral disks are observed with increasing frequency in these cases of traumatic spine. Physicians must always bear in mind as a complication of trauma the possibility of malignancy, metastatic or primary, as a cause of backache, especially among elderly patients. I have seen injuries apparently incurred in industry, diagnosed as traumatic backache, which ultimately proved to be the result of malignancy. One should be extremely careful when expressing an opinion that a person is malingering, for it has been my experience in such cases occasionally to find evidence of fractures, arthritis or metastasis. In persistent cases of sciatica or numbness following injury even though there is evidence of spondylitis or arthritic changes in the spine, it is well to have a neurologic examination so as to rule out a tumor of the spinal cord. Dr. Jepson's treatment by Buck's extension stiff bed, corsets, belts and casts is similar to the method carried out at the Mayo Clinic. The facet syndrome has not been generally recognized, and I believe Dr. Ghormley's paper is timely, for the facets are true joints subject to the same stresses, strains, injuries and diseases to which other joints are subject, and with modern roentgenographic technique the physician has the opportunity to study the changes that take place in them and to appreciate their importance.

DR. ROBERT B. OSOON, Boston. Dr. Jepson's division into four distinct types may be useful to the general practitioner, but I think it is perhaps dangerous if it becomes routine among surgeons whose experience makes it possible for them to think for themselves. For example, not every case of traumatic backache is always associated with sciatic scoliosis, and not every case of sciatic scoliosis is due to trauma. I take it that all of Dr. Jepson's cases were treated by the method he advocates. I should like to see a chart added to the paper, a copy of which Dr. Jepson was kind enough to let me have before this meeting giving an exact diagnosis and a division into his type or a combination of them and the number of cases completely or partially relieved, and the duration of symptoms before relief. In the six cases reported in his paper no exact diagnosis is given and the end results he has reported suggest rather a long period of cure which in case 1, for instance is reported as lasting a year in case 2, two years in case 3, a year and eleven months in case 4, eleven months, in case 5 a year and eleven months in case 6 three years and nine months. Undoubtedly, in Dr. Jepson's cases relief was complete long before that time but it gives the impression that the treatment is somewhat prolonged. Dr. Ghormley has done a real service in recalling to attention the importance of these changes in the lumbosacral and the sacro iliac facets, as have Dr. Goldthwait and Drs. Wilson and Danforth. Dr. Putti, especially in his Lady Jones lecture, has called attention to this extremely common narrowing of the lumen by changes in the facets. There is perhaps no region in the body where anatomic variations are more common not only in the way of sacro iliac changes, but when the potentialities of irritation exist because of unequal leverage and therefore potential strain and traumatic arthritis, with which Dr. Jepson is most concerned. I am of the opinion that very accurate diagnoses will be missed often if the true sciatic pain and associated pain are considered as referred only from lesions of the sacro iliac joint. Tuberculosis of the sacro iliac joint and displacement of the sacro iliac joint are often free from sciatic pain and it gives proper cause for further consideration of referred pain. Probably lumbosacral lesions are more common than sacro iliac lesions, in spite of medicolegal evidence to the contrary. The accuracy of diagnosis should be very much improved by the new oblique technique and the presence of the lesion clearly shown if the roentgenologist can learn the technique accurately. It is a rather difficult technique for the ordinary roentgenologist to learn. The presence of these occlusions of lumens is demonstrated very easily in the collection of spines to which Dr. Ghormley has referred and in the arthritic exhibit here the spines of the hypertrophic arthritis cases show an almost complete occlusion of the facet. We must as a rule then learn the exact anatomic structure and the lesions of the lumbosacral facets if we are to make an accurate diagnosis and apply the proper treatment.

DR. LEWIS CLARK WAGNER, New York. The defective articular facet is most of all to be associated with defects in the pedicle and laminae of the vertebrae. I see many cases of this

sort at the Neurological Institute in New York and the Hospital for Ruptured and Crippled. This type of case sooner or later presents neurologic symptoms and signs. In an analysis of a number of cases of congenital defects of the lumbosacral joint, all of which have been studied and proved, the occurrence of pain was as follows: pain in the sacro iliac region, 10 cases, pain in the vicinity of the lumbar muscle of the affected side, 12 cases, bilateral, 1 case, pain over the sacrolumbar joint, 10 cases, pain on the opposite side, 1, pain in the gluteal muscle and hip, 4, pain over the sciatic notch, none, pain on the outer side of the thigh and knee, 5, pain along the sciatic nerve, 3, numbness about the outer side of the leg and calf, 4, pain about the instep, 5. This next is very important: could produce pain by certain movement, 5, lying down relieved pain, 6, trauma the cause because of sudden fall, 7 cases. As to the duration of symptoms: 1 case, eighteen years, 2 cases ten years, 1 case five years, 5 cases, four years, 1 case, three years, 2 cases two years. Next is the age at which symptoms appeared: 1 case 18 years, 1 at 24 years, 1 at 25 years, 2 at 30 years, 1 at 32 years, 1 at 33 years, 1 at 34 years, 2 at 35 years, 1 at 36, and 1 at 37 years. A man, aged 36, of stocky build, came under my care in 1925 with the history of eighteen years of recurrent attacks of pain, deformity and disability in his spine and left leg. These attacks were brought on by the slightest unguarded muscular activity, such as leaning over to tie his shoe or to lift small objects. He had so much numbness, coldness and atrophy of the left leg that I felt sure he was suffering from a nervous condition. I did not appreciate the anomaly or absence of articular facets in this case until 1930, at which time a lumbosacral fusion was done with complete relief of pain. However, the numbness was the last symptom to disappear. In lumbosacral anomalies the subjective pain is segmental in distribution, being completely localized to the areas supplied by the first, second and third segments. In the cases under consideration, the inflammation about the spinal column and its articulations causes spasm of the lumbar muscles with a physicochemical irritation of them and a great deal of the pull on their periosteal attachments with a further demonstrable tenderness. The rotation of the fifth lumbar vertebra associated with a too adherent dura to the spinal nerves as they make their exit from the vertebral foramina or the narrowing of the intervertebral foramina, must transmit such irritability to the spinal cord over the nerves supplying the muscles, ligaments and periosteum affected.

DR PAUL N. JEPSON, Philadelphia. I think that the suggestion to include the anomalies of the back in my classification, is an excellent one but for the sake of brevity I limited my paper to traumatic lesions only. Perhaps I was unfortunate in the selection of the cases illustrating traumatic backache but these six cases appeared to be rather typical. The duration of the period of disability prior to the treatment varied from four weeks to six months. In those cases requiring operation the disability lasted for more than a year. I want to express my appreciation of the splendid discussion.

DR RALPH K. GHORMLEY, Rochester, Minn. I am glad that Dr. Meyerding and Dr. Wagner mentioned the importance of a neurologic examination. There certainly is nothing more important when one is considering surgery in these cases than a neurologic examination. My own feeling is as Dr. Wagner has mentioned that a lumbar puncture should be done. The technique of the three quarters view or the oblique view will be published shortly. It has been worked out by the roentgenologic department. It is not always easy to get good roentgenograms of this type and much care must be exercised in taking these pictures. Dr. Putti has ably discussed these pathologic changes and advocated extensive excision of these facets. It is a little unwise to remove many facets because the stability of the spine may be so affected that damage may be done. I didn't mention the postoperative care in this type of operation. We put the patients to bed after the operation on a Bradiord frame using a scultetus binder. At the end of six weeks the patients are allowed to be up with a canvas belt or corset. Four months later we take check up roentgenograms to make sure that union has taken place. We give them exercises to rehabilitate the muscle which are so severely atrophied at that time.

CARBON DIOXIDE AND OXYGEN IN OBSTETRICS

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The presentation of this paper is in the nature of a preliminary report of our observations over the last two years in our private work, and during the past year in the Louisville City Hospital. The subject matter here-with deals principally with the clinical results together with a brief discussion of physiology, in our use of carbon dioxide and oxygen mixtures as a therapeutic agent in the treatment of some complications of obstetrics. We plan, at a later date, to report the results of experimental laboratory studies on this subject. Among the complications thus treated are asphyxia and atelectasis neonatorum, postlabor and postanesthesia shock, uterine inertia during labor, postpartum hemorrhage, the terminal depression of severe toxemia, and postcesarean abdominal distention.

Current literature teems with the controversy between a group of investigators who contend that carbon dioxide is superfluous and harmful to the asphyxiated newborn infant¹ and another group² who claim that oxygen alone is not entirely adequate for resuscitation of asphyxia neonatorum. It is our conclusion after clinical investigation and diligent perusal of the literature that both groups are right as far as they go but that the common ground between them, the use of adequate and intelligently varied mixtures of carbon dioxide and oxygen, will give the desired result in resuscitation when nerve cells of the center have not been deprived of the minimum supply of oxygen and carbon dioxide for the maintenance of fetal existability.

Three years of oxygen administration (1928-1931) with some means of artificial respiration failed to decrease the mortality rate in the asphyxias or to overcome atelectasis, the forerunner of pneumonia. Carbon dioxide alone was obviously not used, but the use of variable mixtures of carbon dioxide and oxygen from 5 to 30 per cent of carbon dioxide, with a full complement of oxygen, for the past two years in our practice of obstetrics and treatment of the new-born enables us to say that we have not failed to resuscitate a single asphyxia patient except one with cerebral hemorrhage and one with a congenital abnormality of the heart. Both infants were premature. We have had no atelectasis that was not easily controlled with the mixtures and have had no subsequent bronchitis or pneumonia. Similar treatment of the new-born in the obstetric service at the Louisville City Hospital, for the past year has yielded equally good results in respect to neonatal pulmonary complications.

An understanding of the physiology of respiration and the pathology of asphyxia is a prerequisite to the intelligent administration of the gases and the results are in direct proportion to the degree of such understanding. The ready-made mixtures of 5, 7 or 10 per

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¹ Eastman, N. J. Fetal Blood Studies. Bull. Johns Hopkins Hosp. 70: 39-50 (Jan.) 1932. Kane, H. F. and Kreiselman, J. Carbon Dioxide Content of the Blood in the New Born. Am. J. Obst. & Gynec. 20: 826-827 (Dec.) 1930.

² Henderon, J. and Hill. Resuscitation from Asphyxia in New Born and Others. Its Control and Treatment. New England J. Med. 190: 97-99 (Nov. 15) 1923. Seward, B. C. Remarks on Causes of Asphyxia of the New Born and on Resuscitation. Ibid. 190: 97-99 (Nov. 15) 1923.

cent of carbon dioxide with their complement of oxygen are safest for the average physician, but they cannot be applied with success in all cases, for we have found that, as a rule, the greater the degree of asphyxia and lowered excitability of the centers, the higher the percentage of carbon dioxide necessary for stimulation. The classic differentiation of asphyxia livida and pallida are examples the pallida being simply a greater degree of asphyxiation and requiring higher percentages of carbon dioxide for stimulation. The laryngeal reflex used as a means of distinguishing the degree of asphyxia has never been used by us, as we feel that it is a waste of time. It is easy to insert a tracheal catheter if response to the mixtures of 20 or 25 per cent carbon dioxide is not shown within a few seconds. When mixtures above 5 per cent are used they must gradually be lowered as response increases so that the respiratory efforts of the child will be stimulated only slightly above normal action. The mixtures should never be given strong enough to cause a gasping struggling, straining type of respiration. The objective symptoms are the guide and the nearer the normal respiratory rate the treatment can be carried out the longer it can be kept up and the more oxygen can be furnished to the tissues.

It has always been our idea to use carbon dioxide as a vehicle for oxygen supply to the tissues. Coryllos³ has shown that oxygen passes more quickly from the air sacs to the blood when a small percentage of carbon dioxide is present.

Our routine neonatal treatment of premature infants includes the administration of 5 per cent of carbon dioxide and 95 per cent of oxygen into a tent for a few minutes three times a day. The length of time of each treatment is determined by the respiratory response of the patient, but the average is about fifteen minutes.

The development of shock during anesthesia and following the emptying of the uterus is mainly due either to the anesthetic or to fatigue or to both. The cause in both instances is ultimately the same for to the acidosis and paralyzing effect of the anesthetic is added the increased lactic acid production of the maternal tissues with displacement of carbon dioxide from the base.

If the degree of acidosis is sufficient to produce a mild degree of shock with splanchnic endorsement, an insufficient amount of oxygen and carbon dioxide is supplied to the uterine muscle to oxidize its excessive load of lactic acid.⁴ A local acid base imbalance remains and increases in the smooth muscle cells with subsequent shock and loss of tone of the uterine muscle, and postpartum hemorrhage then occurs.

All of the mechanical methods⁵ of control of postpartum hemorrhage cause an ischemia of the uterine muscle, thereby defeating any possibility of immediate restoration of function. Therefore the treatment of postpartum hemorrhage resolves itself into the treatment of shock. The administration of carbon dioxide and oxygen, by decreasing the primary acidosis⁶ elevates the general nervous tone⁷ and accelerates circula-

tion,⁸ thereby reestablishing normal tone and function of the uterine muscle.

In shock due to anesthesia, the administration of carbon dioxide and oxygen stimulates the respiratory center, causing an increase in respiratory depth and rate, thereby furnishing more oxygen to the hemoglobin, relieving acidosis, stimulating the heart muscle accelerating circulation and elevating tissue tone.

Something more than one year ago our attention was called in a rather unique manner, to a possible effect of carbon dioxide inhalations as a stimulant to uterine contractions during labor. A private patient who had been having a prolonged first stage with weak, irregular contractions was developing uterine inertia. We thought it likely that she was having a fatigue acidosis and decided to administer several inhalations of carbon dioxide and oxygen to see what clinical effect we would get in combating the fatigue. After a few inhalations we noticed that the uterus began a good contraction, followed by adequate relaxation. After this contraction, we gave the patient a few more inhalations and were gratified to see the contractions occurring with good regularity and force. Our impression was that the carbon dioxide had stimulated normal uterine contractions with normal relaxation periods. Recognizing the possibility of these phenomena being coincidental we employed the same procedure in every case of inertia and found a uniformity of response that removed any reasonable doubt as to its effect as a stimulant. Further observations carried on in the City Hospital substantiated our results.

Among the inertia patients at the City Hospital were a number who had received caudal anesthesia, and in these the response was much slower. Our best results were obtained in inertia caused by fatigue or that developing in connection with the administration of such drugs as morphine, sodium amylal, nembutal and chloroform.

As soon as it seemed fairly well established that carbon dioxide actually did have a stimulating effect on uteri suffering from inertia during labor, we decided to employ it in those cases of excessive bleeding due to inertia following the expulsion of the placenta. Ordinarily there will be only normal bleeding if contractions during the third stage have been strong enough to expel the placenta spontaneously. But there is a certain percentage of cases in which some degree of shock occurs after a physiologic third stage, owing to relaxation of the patient following prolonged, tiring labor, or associated with some form of anesthesia. The degree of shock in most of these cases is so slight that the relaxation of the uterus is the only clinical evidence of depression, or it may rarely become sufficiently severe to have the clinical picture of surgical shock. We feel that, from our observations, this mild form of shock is the cause of more postpartum hemorrhage than has hitherto been thought.

In our private work we have adopted the plan of administering a few inhalations of carbon dioxide and oxygen immediately following the expulsion of the placenta and have had no undue bleeding from the placental site in any of these cases in two years. In the City Hospital we have for the past several months, employed carbon dioxide and oxygen inhalations as a routine in all cases of profuse bleeding from the placental site following the expulsion of the placenta. Records on twenty-five such cases show uniformly

³ Coryllos P. N. and Birnbaum G. L. Alveolar Gas Exchanges and Atelectasis. Mechanism of Gas Absorption in Bronchial Obstruction. *Arch Surg* 21: 1214-1281 (Dec.) 1930.

⁴ Eastman N. J. and McLane C. M. Foetal Blood Studies. *Bull Johns Hopkins Hosp* 45: 261-268 (Feb.) 1931.

⁵ De Lee J. B. Principles and Practice of Obstetrics. ed. 6 Philadelphia W. B. Saunders Company 1933 pp. 840-853.

⁶ Hendon G. A. Venoclysis. *J. A. M. A.* 95: 1175-1177 (Oct. 18) 1930.

⁷ Sollmann and Pilcher. Vasomotor Center. *J. Pharmacol.* 1: 571 1910.

⁸ Henderson Landell and Harvey S. C. Veno Pressor Mechanism. *Am. J. Physiol.* 46: 533 (Aug.) 1918.

good results. We are reporting briefly four of these cases taken at random from this list as typical of the results we have obtained. In these cases carbon dioxide was not used as a prophylactic, as in our private work, therefore we were better able to study its effect as a therapeutic agent to check a hemorrhage already established.

REPORT OF CASES

CASE 1—R M, a white girl aged 17 years, a primipara and primigravida had a funnel pelvis. The first stage of labor, Nov 7, 1932, lasted thirty-six hours, the second stage, five hours and forty minutes. She was delivered of a female infant, weighing 7 pounds and 4 ounces (3,300 Gm), with difficulty by low forceps under chloroform anesthesia. The blood loss was 600 cc. The patient became cyanotic, and carbon dioxide, 5 per cent and oxygen 95 per cent, was given by inhalation. After ten minutes cyanosis disappeared and the patient's condition became satisfactory. Fifteen minutes later she showed evidence of shock, as bleeding became profuse. The carbon dioxide and oxygen was given for five minutes, while symptoms of shock disappeared the uterus began to contract and hemorrhage ceased. After this, no evidence of shock or hemorrhage appeared.

CASE 2—M G, a Negress, aged 23, a secundipara and secundigravida, was admitted Dec 25, 1932, with fever of 102 F. The os was completely dilated. She had been in labor eight and one-half hours. Caudal anesthesia was given and she delivered a female infant weighing 7 pounds and 2 ounces (3,230 Gm). The placenta separated spontaneously after twenty-five minutes. The uterus failed to contract, despite the administration of solution of pituitary and ergot, and bled profusely. The cervix was examined and showed no tears. The fundus would not remain hard despite repeated doses of solution of pituitary. The patient went into shock and was given inhalations of carbon dioxide 5 per cent, and oxygen, 95 per cent. She rallied well, the uterus contracted and hemorrhage stopped. Her condition remained good.

CASE 3—B B, a woman aged 39, a quintodecipara and quintodecigravida, Nov 1, 1932, was in a toxic condition, with a blood pressure of 150 systolic, 95 diastolic. At 5 p m she noticed a slight pain and the membranes ruptured at which time 12 inches of cord prolapsed. The patient was put on the delivery table in the Trendelenburg position, and under gas anesthesia unsuccessful attempts were made to restore the cord. The cervix was found to be dilated from 2 to 3 cm. Dilatation occurred rapidly and a still-born male infant weighing 7 pounds and 12½ ounces (3,530 Gm) was delivered by podalic version and breech extraction. Acute pulmonary edema developed during anesthesia and the patient bled profusely from the relaxed uterus, losing 800 cc of blood. The hemorrhage ceased under inhalations of carbon dioxide 5 per cent and oxygen 95 per cent. The blood pressure had dropped to 94 systolic, 58 diastolic. Carbon dioxide was given every fifteen minutes for four hours, at which time pulmonary edema had disappeared. The blood pressure and general condition remained satisfactory.

CASE 4—M B, a white girl aged 16, a primipara and primigravida, June 9, 1933, had been in the first stage of labor forty hours and in the second stage fifteen minutes. She was delivered by midforceps. The pelvis was of the rachitic type. The placenta was delivered fifteen minutes later by the Crede method because of uterine bleeding with uterine inertia before the placenta was expelled. Solution of pituitary, 0.5 cc and one ampule of ergot were given immediately after the placenta was expelled. Profuse hemorrhage then occurred. Solution of pituitary was repeated in five minutes. This treatment combined with massage and pressure failed to stimulate uterine contractions. Carbon dioxide 5 per cent, and oxygen, 95 per cent was given for five minutes. Twenty minutes after the placenta was expelled. Within one minute the uterus developed a firm contraction the first since the placenta was delivered and contractions continued controlling the hemorrhage. About ten minutes after carbon dioxide was discontinued uterine relaxation with bleeding was again noticed. Carbon dioxide was again administered and the uterus again contracted and hemorrhage without further hemorrhage. The blood loss was 1,000 cc.

It will be noted that in cases 1 and 2 some shock was a demonstrable complication of the bleeding, and in case 3 a toxic condition with acute pulmonary edema accompanied the hemorrhage.

In a certain percentage of cases of eclampsia the toxemia becomes so severe that a paralyzing effect on the cardiovascular system takes place, with the result that the elevated blood pressure drops rapidly to far below normal limits, the pulse becomes very rapid and thready and pulmonary edema quickly develops. The patient becomes cold and sweaty, the respirations become slow and shallow, and she dies of the depressive influence of the toxin. We have employed carbon dioxide in five cases of this type with prompt recovery in three. In the two cases in which death resulted, autopsy showed a severe coexistent infection, in one case a well established pneumonia and, in the other, liver abscesses. Both patients had developed postpartum eclampsia in the home and were brought into the City Hospital after a long delay. Case 5 illustrates the success of carbon dioxide therapy in a severe depressive condition such as described, even when the case is complicated with a probable pneumonia, treatment being instituted early.

CASE 5—Mrs P W, a white woman, was delivered by her family physician of a living child at 8 20 a m, Aug 30, 1932. The prenatal history was normal. Soon after delivery a headache developed which increased in severity. Two hours and forty minutes after delivery she began having convulsions and became unconscious. She was admitted to the Deaconess Hospital and seen by one of us (W T M) at 2 p m. The blood pressure was 148 systolic, the diastolic pressure not registering. The temperature was 103.6 axillary, the pulse was irregular and 136 per minute, respirations were 28. Severe pulmonary edema and cyanosis were present. A catheterized specimen of urine showed albumin 3 plus. The diagnosis was postpartum eclampsia. She was given 7½ grains (0.5 Gm) of sodium amytal 100 cc of 50 per cent dextrose and 1 cc of digifoline, intravenously, followed by gastric lavage, 4 ounces of magnesium sulphate saturated solution being left in the stomach. At 3 30 p m her condition was worse and oxygen was administered by tent, with no improvement even in cyanosis. At 6 15, carbon dioxide 10 per cent, and oxygen, 90 per cent was administered for twenty five minutes by tent. The respiratory volume increased. The rate increased from thirty-six to forty-four per minute. The cyanosis disappeared. At 8 30 the blood pressure was 95 systolic, 35 diastolic, the pulse, 128, full and regular. The temperature was 102.2 F. The respiratory rate was 32. The patient answered questions and drank water. Examination of the chest showed only a few scattered fine rales. At 9 15, carbon dioxide, 5 per cent, and oxygen 95 per cent, was again given, being administered fifteen minutes each hour. The patient talked intelligently and will say she felt better. August 31, at 7 30 a m, eleven hours after carbon dioxide and oxygen was started the temperature was 99 F, respiration rate, 28, pulse 100, blood pressure 122 systolic and 80 diastolic. The chest was clear. There was a trace of albumin and the urinary output increased. Carbon dioxide 5 per cent and oxygen 95 per cent was administered three times a day for two more days. The patient made an uneventful recovery.

We report briefly one case of acute yellow atrophy of the liver, occurring post partum.

CASE 6—Mrs L W, a white woman, aged 30, a primipara and primigravida seen in consultation by one of us (W T M) was delivered after forty-eight hours of first stage labor, of a 3½ pound (1,587 Gm) seven month fetus. Owing to a marked congenital cervical atresia, a vaginal cesarean section was necessary to extract the fetus. On the second day following a classic case of acute yellow atrophy developed with almost immediate coma. A continuous flow of 10 per cent dextrose with calcium gluconate was given through a cannula anchored in the vein by venoclisis (Hendon's). At varying intervals the patient's respi-

rations would become very shallow and soon would cease altogether, the pulse becoming very rapid and weak. Artificial respiration forcing carbon dioxide into the lungs was used. After several such forced inhalations breathing would again become spontaneous and within a few minutes would be fairly normal, the heart tone and the patient's color improving. For the first two or three forced inspirations, a concentration of 50 per cent carbon dioxide was used. As soon as respiration became spontaneous, the oxygen percentage was increased to 95 and continued thus for two or three minutes. These attacks became less frequent until after three days of continuous dextrose and intermittent carbon dioxide administration the coma disappeared, the jaundice began to clear up and the patient made a satisfactory recovery.

Abdominal distention following cesarean section is due to shock, paralysis of the splanchnic nervous system, loss of smooth muscle tone and decrease in local circulation. Pressure in the intestine aggravates the condition. An increase in carbon dioxide tension has long been known to stimulate smooth muscle activity. Therefore one would expect the administration of carbon dioxide and oxygen to stimulate peristalsis and restore normal cellular function. We have found in our work in the City Hospital that this hypothesis is borne out by clinical results. Our records show that the gas mixture was used in sixteen consecutive cases with success.

Case 7 is reported herewith as a typical result.

CASE 7.—F. D., a Negroess, aged 16 years, a primipara and primigravida with a generally contracted pelvis, after a six hours trial labor was delivered of a 6 pound and 11 ounce (2933 Gm.) baby by Phaneuf low cesarean section. About eight hours after operation the patient became distended with gas. After thirty-six hours with no relief carbon dioxide, 5 per cent and oxygen, 95 per cent, was administered for five minutes. This was repeated every half hour for four doses. Immediately after the first administration the patient asked for a bed pan and passed a large amount of flatus and a watery stool. From this time on intestinal peristalsis continued. Before the carbon dioxide administration enemas, colon tube and gastric lavage had been done without any stimulation of peristalsis.

CONCLUSIONS

1. From 1928 to 1931 oxygen therapy was applied to all the conditions described, without any appreciable change in morbidity or mortality.
2. Carbon dioxide and oxygen mixtures, when administered by the metric control system, have been adequate for the relief of asphyxia neonatorum atelectasis neonatorum and its sequelae over a period of two years.
3. Carbon dioxide and oxygen mixtures safely and promptly combated uterine inertia in the first stage of labor.
4. The classic mechanical treatment of postpartum hemorrhage does not stand up under physiologic investigation. Hemorrhage is evidently due to postpartum acidosis of the uterine muscle. Carbon dioxide and oxygen controlled twenty-five consecutive cases.
5. The abdominal distention following cesarean section was promptly relieved in sixteen consecutive cases, even after thirty-six hours' duration in one instance.
6. The practical points in symptomatic administration are that treatment will usually be started with mixtures of between 20 and 30 per cent of carbon dioxide with oxygen. This high percentage is only for stimulation of the respiratory center and must be promptly reduced after a few inspirations, to the percentage that will maintain a normal or slightly higher respiratory rate.

Strict regard must be paid to the fact that even 5 per cent of carbon dioxide and 95 per cent of oxygen will overstimulate in some cases and should then be used for only a few minutes at a time.

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ABSTRACT OF DISCUSSION

DR. WALTER M. BOOTHBY, Rochester, Minn. The question of oxygen therapy is not limited to obstetrics. However, in obstetrics there is undoubtedly an ample opportunity for its extensive use. For example, as it is impossible to choose the time of delivery, the patient at delivery may have a slight cold such as would lead to the postponement of an ordinary surgical operation or, worse, she may have severe bronchitis or even pneumonia. Under these conditions the proper use of an oxygen tent before and during the early stages of delivery would be most helpful. In addition to the beneficial effects of oxygen one can obtain by the use of the modern type of tent the added comfort in warm weather, of an atmosphere cooled 10 or 15 degrees below the room temperature. The disadvantage of oxygen therapy is its expense, but with modern tents and proper management the cost is not prohibitive. Oxygen cannot be properly administered unless frequent analyses are made of the oxygen and carbon dioxide content of the tent air. Oxygen therapy is also of great benefit to either premature or term infants who have any respiratory difficulty. For this purpose a Hess incubator can be easily modified so that it will become a miniature oxygen chamber. The question of the administration of carbon dioxide in addition to oxygen is of course an important one. However, I think the title of the paper, Carbon Dioxide and Oxygen in Obstetrics, emphasizes the wrong point. Oxygen therapy is undoubtedly beneficial, the presence in the inspired air of between 1 and 2 per cent of carbon dioxide will do no harm and may possibly do some good by increasing the depth of respiration. The inhalation of mixtures containing 30 per cent of carbon dioxide as occasionally recommended by some is dangerous and of course can not be done for more than very few breaths.

DR. E. D. PRASS, Iowa City. I should like to ask the authors what evidence they have that the administration of oxygen and carbon dioxide relieves acidosis and that the stimulation of the uterus in first stage inertia is attributable to a change in acid-base balance. It has been my experience in another connection that the production of acidosis by starvation acts as a very efficient uterine stimulant, inducing labor in from 30 to 50 per cent of patients.

DR. HENRY F. BECKMAN, Indianapolis. May I ask a question? If the carbon dioxide mixture stimulates and establishes respiration after birth, what does it do to the infant before birth when given to the mother?

DR. W. T. McCONNELL, Louisville, Ky. I thank Dr. Boothby for emphasizing certain precautions in regard to the use of carbon dioxide. One of them is that even a weak mixture (5 per cent) can be breathed too long and result in a modified convulsion. Therefore, one must stop it when the physiologic effect has been obtained. The reason we say 5, 10 or 20 per cent when we use the stock mixtures is that that is what is on the carton and is not always what the patient gets when mixed with the air in a tent. When we make our own mixtures with the machine we use we know what they are getting when given by direct inhalation. The extent of depression of the centers governs the concentration needed to revive the patient whether it is asphyxia shock, inertia or hemorrhage. It takes an experienced man to understand the responses in such a way as to administer it intelligently. With regard to the muscle tone of the uterus, all I can say personally is that whatever causes the shock producing the relaxation of the uterus can be relieved by carbon dioxide. Dr. Boothby says it is not carbon dioxide that accomplishes results, but the oxygen. We agree with him. The carbon dioxide is the vehicle by which the oxygen is made available to the tissues. In answering the question with regard to acidosis, I wish to state that there is a marked increase in lactic acid at the end of the second stage. Our experience convinces us that this causes the shock, but whatever it is our clinical results show that weak mixtures of carbon dioxide and oxygen stimulate muscle

tone and accomplish the results. As to what effect it has on the baby before it is born, our observation is that the babies are born in a better condition, need less resuscitation and are of a better color when the mother has been given a little carbon dioxide and oxygen just before the baby is completely born or just after the head is out. We have watched this in a large number of cases and it works out that way. The apparatus we use in our private work is the McCormack resuscitator carbon dioxide machine and it can be seen in the Scientific Exhibit.

PHARMACOLOGIC ACTION OF BARBITURATES

THEIR USE IN NEUROPSYCHIATRIC CONDITIONS

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The barbituric acid derivatives have recently assumed a rather prominent role in the treatment of psychotic patients. Although among psychiatrists interest has primarily centered around the psychologic reaction produced by these drugs, I believe that a concise consideration of the pharmacologic action would not be amiss.

Though in general their action is quite similar, they differ principally in rate of effectiveness, rate of elimination and, to some extent, degree of toxicity. The more commonly used barbiturates can be divided into two groups: the shorter acting drugs, consisting of pentobarbital sodium, amytal and secondary butyl beta bromallylbarbituric acid sodium salt, and the longer acting group, consisting of phenobarbital, neonal, ipral, a barbituric derivative with amidopyrine, dial and barbital. In general, all are somewhat more rapid in their action if combined with sodium. The degree of toxicity has been worked out by Barlow,¹ who gave the order of toxicity, from high to low: secondary butyl beta bromallylbarbituric acid sodium salt, barbital, phenobarbital, amytal, neonal, a barbituric derivative with amidopyrine, dial and pentobarbital sodium.

PHARMACOLOGIC ACTION

Effect on Metabolism—The basal metabolic rate is little affected by barbituric acid narcosis. There is rather a slight initial fall, which then remains constant.² Guinea-pigs which were under the influence of barbiturates and were given thyroid extract showed a rise in basal metabolic rate similar to the controls which had not received the drug.^{2a} A slight fall in body temperature usually occurs.

Some controversy exists in regard to their influence on sugar metabolism. Page³ and Deuel^{2b} found no change in the blood sugar. Isenberger⁴ found no appreciable change in the blood sugar, but stated that in some cases a decrease in sugar tolerance could be demonstrated. Underhill⁵ reported an increase in blood sugar in rabbits. Hines⁶ reported that amytal lessened the ability of the animal to handle dextrose, and he found an increase in blood sugar with glycosuria. In a

later communication,⁷ he reported the muscle glycogen to be about the same in animals with and without amy-tal anesthesia. When dextrose was given intravenously, he found the liver glycogen to be more than twice as high in animals anesthetized with sodium amytal as in unanesthetized animals. Most investigators agree that the increase in blood sugar rarely exceeds normal limits.⁸

Effect on Circulation—A fall in blood pressure has been a constant finding. The most striking fall is brought about by sodium amytal and, when given intravenously, is somewhat proportionate to the rate of injection. The fall in systolic blood pressure is proportionately greater than that in diastolic pressure.⁹ A slight rise in diastolic pressure has been reported.¹⁰ In cases of hypertension, a fall in systolic pressure from 200 to 100 mm of mercury has been noted.¹¹ The fall in blood pressure is less pronounced when longer acting drugs are given. It usually returns to its former level in from thirty minutes to two hours.

The pulse rate is usually slightly increased. On some occasions a decrease in pulse rate has been noted,¹² but this usually occurs when the pulse is accelerated because of excitement.⁹

Vasodilatation of the peripheral circulation is produced, resulting in flushing¹² and, in some cases, in cyanosis.¹³ There is also a resultant decrease in the tonus of the heart muscle.¹⁴ The permeability of the endothelium of the capillaries is altered,¹⁵ and water is directed toward the tissues of the body.

Gruber and Roberts have made detailed studies of the effect of both longer and shorter acting drugs on the cerebral circulation¹⁶ and the coronary circulation.¹⁷ In each case they found that vasodilatation took place when the drug was injected in dilute solution. They concluded that the barbituric acid derivatives acted directly on the wall of the vessel, causing vasodilatation.

Blood Chemistry—A definite fall in the calcium content of the blood occurs.¹⁸ A similar fall in blood calcium has also been demonstrated during sleep induced by other hypnotic agents.^{18a} The changes in potassium content have not been constant; there may be either an increase^{18a} or a decrease.^{18b} The phosphorus and magnesium content is decreased,^{18b} while a slight increase in blood bicarbonate has been found.¹⁹ Depression of respiration causes an increase in carbon dioxide tension.²⁰ The carbon dioxide-combining power is not affected²¹ if respiration is not depressed, as has been shown by the intratracheal administration of oxygen.¹⁹ The hydrogen ion concentration is slightly increased if

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21. Hines, Leese, and Brier. *Bourne, Bruger and Dreyer.*

the drug is given intravenously,²² the p_{H} value falling from 0.1 to 0.2 unit.¹⁹ Dilution of the blood has been shown to occur and has been explained as being due to an accumulation of corpuscles in the spleen, which is increased in size.

Effect on Respiration—All members of the barbituric acid series depress the respiratory system when doses large enough to produce deep narcosis are administered.²³ The rate of respiration may be decreased,²⁴ but more commonly it is increased.²⁵ The respiratory excursion usually becomes shallow.²⁶ The shorter acting barbiturates produce death by respiratory paralysis,²⁷ in which case the thorax is usually expanded, and pressure on it will permit it to fill. The patient may again resume breathing, since the margin of safety between respiratory failure and cardiac failure is fairly wide.⁹ In prolonged narcosis, especially if the longer acting drugs are employed, pulmonary edema usually occurs, the patient is unable to raise mucus,²⁸ and death may occur from pulmonary congestion or other complications such as pneumonia.²⁷

Effect on Renal Function—When the drug is given in hypnotic doses, the urinary output is usually appreciably diminished,²⁸ but the flow of urine returns to normal within from six to twenty-four hours.²⁹ There is no impairment of glomerular activity, as shown by the phenolsulphonphthalein excretion,³⁰ even when the drug is given in fairly large doses over a comparatively long time.^{13b} The urea output is diminished for a period of from four to six hours,¹⁹ while the excretion of urate and phosphoric acid¹⁹ is slightly increased for twenty-four hours following administration of the drug. Acetone has been found in small amounts for twenty-four or forty-eight hours.^{13b}

Effect on Hepatic Function—Some controversy exists in regard to the effect on the liver. Some investigators have found a slight but transient damage to the liver with no delayed injury, and have considered the effect negligible.¹⁹ Others have been able to demonstrate very little action on hepatic function, as shown by the bromsulphalein test,⁹ while, as stated previously, Hines⁷ found the glycogen in the liver to be more than twice as high in animals anesthetized with sodium amytal as in unanesthetized animals when dextrose was given intravenously.

Effect on the Gastro-Intestinal Tract—Few experimental data are available concerning the effect of the barbiturates on the gastro-intestinal tract. A number of clinical observations have been made, and it has been observed in surgical work that nausea and vomiting are considerably decreased when barbiturates are used as premedication for ether anesthesia.^{23a} It has also been noted that they control vomiting in gastric crises of tabes.²⁸ They have been shown to decrease the tonus and amplitude of contraction of the small intestine of rabbits.¹⁴

Neurologic Changes—When light narcosis is induced, a slight and transient nystagmus³¹ occurs with some vertigo, a feeling of inebriation and staggering gait.¹⁴ The patient may also complain of double vision.¹ Under light narcosis the pupils are dilated³² but as the depth of narcosis increases they contract slightly and may become fixed.³³ The corneal reflexes are diminished^{33a} or abolished completely.³⁴ In light narcosis the speech becomes thick and slurred,^{33a} the gag reflex remains intact except in extremely deep narcosis, when it is abolished, and there is a tendency for the tongue to fall back.^{13a}

When the shorter acting barbiturates are given in small doses, the deep reflexes are increased.^{33a} Both the deep and the superficial reflexes are diminished under larger doses, or they may be entirely abolished.³⁵ The skin and sphincter reflexes disappear under deep narcosis.⁷ With the longer acting barbiturates, the reflexes may be augmented in all stages of narcosis.¹⁴ There may be slight relaxation of the rectal sphincter,^{13b} and the tone of the bladder may be lost,⁹ making catheterization necessary. Motor restlessness may be present during narcosis, induced by either the longer acting or the shorter acting barbiturates.^{13a} Both will control convulsions.³⁶ However, if the longer acting drugs are given in large doses they may themselves produce clonic and tonic convulsions.¹⁴ The shorter acting drugs have not been observed to produce convulsions, even in extremely large doses.

The threshold for painful stimuli is decidedly increased,¹² and during deep narcosis no response to painful stimuli can be obtained.^{13a} Pain has been controlled in patients with tabetic crises.³⁷ Seven and one-half grains (0.5 Gm.) of sodium amytal, given intravenously, has controlled pain in a patient suffering from bilateral thrombosis of the iliac arteries when large doses of morphine had failed.²⁸

The Psychologic Effect—The use of barbiturates as premedication in surgical treatment has given valuable information regarding the psychologic effect on normal persons. If barbiturates are given to patients before they are taken to the operating room, the fear and apprehension that are usually encountered are decidedly decreased.³⁷

Additional information has been given by Lindemann,¹² who studied a group of students and observed the psychologic effect induced by the administration of small doses of sodium amytal. His observations uniformly showed a striking change in the emotional attitude of his subjects. All of the subjects stated that they experienced a feeling of well-being and serenity, a feeling of warmth and friendship toward the world in general, and gratitude and appreciation for the kindness and goodness of the persons in their environment. They felt a desire to communicate and a willingness to speak about personal problems usually not spoken of to strangers. The future looked bright, and they anticipated future pleasant activities and experiences without effort or drive to carry out their plans immediately. There was no distortion of objects other than a slight

22 Gruber and Roberts¹⁶ Cloetta and Thomann¹⁸
23 (a) Brown G M J Australia 2 437 (Oct 8) 1932 (b) Zervas L G Brit M J 2 897 (Nov 29) 1930

24 Bohn⁹ Murray and Burns¹
25 (a) Bleckwenn W J - Production of Sleep and Rest in Psychotic Cases Arch Neurol & Psychiat 24 365 (Aug) 1930 (b) Zervas and McCallum^{23b} (c) Nitsui¹⁴

26 Bohn⁹ Murray and Burns¹⁰ Lundy^{13a} Zervas and McCallum^{23b} Nitsui¹⁴ Bleckwenn^{2a}

27 Maloney A H and Tatum A L J Pharmacol & Exper Therap 44 337 (March) 1932

28 Lundy J S Anesth & Analg 8 360 (Nov Dec) 1929
29 (a) Maloney A H Fitch R H and Tatum A L J Pharmacol & Exper Therap 41 265 (Feb) 1931 (b) Bourne Bruger and Dreyer¹⁹

30 Emge L A and Hoffman P E Anesth & Analg 10 88 (March April) 1931

31 Lindemann L Lundy^{12a}

32 Lindemann L Bleckwenn

33 (a) Mason J T and Baker J W Surg Gynec & Obst 50 828 (May) 1930 (b) Mason Baker and Pilcher¹¹

34 Nitsui¹⁴ Bleckwenn^{2a}

35 Bohn⁹ Bleckwenn^{2a}

36 (a) Bleckwenn W J Narcosis as Therapy in Neuropsychiatric Conditions J A M A 95 1168 (Oct 18) 1930 (b) Wisconsin M J 29 693 (Dec) 1930 (c) Lundy¹³

37 Blakemore C M J Australia 2 174 (Aug 6) 1932 Lundy^{13a} Brown²¹ Lundy¹³

blurring of vision and occasionally double vision. No hallucinations, dreamlike experiences or apprehensive thoughts were experienced. There was no trace of fear, but only the feeling of relief. The shifting of the emotional state along the depressive elation scale was definitely in the direction of elation. Time was usually underestimated. There was no amnesia for conversation or events during the time the subjects were under the influence of the drug.

In psychotic patients, Lindemann¹² and others³⁸ have noted a similar change in the emotional reaction. Restive, seclusive and suspicious patients will communicate more freely and become emotionally warm and friendly under the influence of the drug. They express a feeling of well-being and a desire to retain this feeling.

Mute patients can frequently be made to communicate delusional ideas which could not otherwise be obtained, but the drug has no influence on the structure of the delusional ideas and hallucinations present before administration.

The Toxic Effect—Toxic symptoms may result from an idiosyncrasy to barbiturates. Most commonly they occur from the long-continued use of moderate doses. This is especially true for the longer acting drugs, which tend to have a cumulative effect. Occasionally toxic symptoms occur because of overdosage, either through accident or due to self-administration with suicidal intent.

The toxic symptoms may be divided into three groups: mental symptoms, reactions of the skin and general symptoms. In acute poisoning with large doses, coma usually occurs. The long-continued use of the drugs produces mental changes such as confusion, uncertainty, defects of attention and memory and impairment of ethical and moral senses.³⁹ Delusions of persecution with fearful hallucinations and illusions frequently occur.

Two types of reactions of the skin have been described: urticarial wheals with itching, probably due to an idiosyncrasy, and a toxic reaction characterized by a morbilliform or scarlatiniform maculopapular erythema. The onset of this rash may vary from one day to several months after beginning the administration of the drug. It is accompanied by intense itching and lasts from two to ten days after the drug has been discontinued. It usually disappears with fine branlike desquamation, and occasionally leaves pigmentation in the skin.

The more common general symptoms include an early subnormal temperature with a slight fever after several days. There may be nausea, epigastric pain and diarrhea. Anorexia is almost always present. Speech is usually thick and the patient may omit words or syllables. Early in acute poisoning the deep reflexes may be diminished or absent. Later they become hyperactive. The pupils are fixed. Diplopia and nystagmus may be present. Ataxia may be present. In extreme cases of long-continued overdosage or acute poisoning with large doses, coma usually results and may terminate fatally.

The shorter acting drugs produce death suddenly by respiratory paralysis, while the longer acting drugs produce death more insidiously with pulmonary congestion, usually complicated by pneumonia.⁴⁰

Pathologic Changes—These changes are quite general for most of the parenchymatous tissue of the body.⁴⁰ The changes although not entirely uniform, do agree in general. The slight variation noted by the different observers has been explained by the variation in the size of the dose taken to produce death and the difference in the time interval between the taking of the drug and the time of death.

There is usually considerable congestion of the capillaries of the brain and meninges with some perivascular hemorrhage and edema. The endothelial cells also show evidence of degeneration. Histologic changes are usually present in the cortex, especially in the deeper layer. The Nissl bodies tend to disappear, and the cortical cells show evidence of degeneration as shown by the disappearance of cell membranes and the presence of granular degeneration products. The cells of all of the important nuclei of the brain stem as well as the cerebellum show similar changes. It seems probable that the cellular damage to the central nervous system is due to the direct action of the drug rather than being secondary to the disturbance of circulation.

Perivascular hemorrhages are usually present in the heart muscle.

The lungs are always congested and may show inflammatory changes.

The effect on the kidney is quite marked. No part of the convoluted tubule is spared, though the distal portion is more affected than the proximal portion. The changes in the glomeruli are less marked, although all show evidence of fatty degeneration.

The liver shows evidence of fatty degeneration. The central portions of the lobes are usually more affected than the periphery.

Capillary congestion with hemorrhage is found in the soft palate, the submucosa of the stomach and the small intestine and mesenteric lymph nodes.

Dosage and Points of Caution—The dosage of the various barbiturates cannot be definitely standardized. Unfortunately all persons do not respond identically to a given dose.⁴¹ A good rule is to start with the dosage recommended by the manufacturer and then to vary it to get the desired effect.

Rules of caution may be observed with advantage. Obese or debilitated patients tolerate the drug poorly, so smaller dosages should be employed. Patients with arteriosclerosis, hypertension^{42a} or myocardial disease⁷ or those with an extremely low blood pressure may react poorly to the shorter acting drugs because of their marked effect on the blood pressure.⁴¹ I believe that the shorter acting drugs should never be given to patients with extreme hypertension. I have observed arteriosclerotic and hypertensive patients complain of extreme vertigo and ataxia after taking even small doses of the shorter acting drugs by mouth.

In patients with respiratory obstruction or pulmonary congestion,⁴¹ these drugs should be avoided because of the depressive effect on the respiratory center, as well as the tendency to cause pulmonary congestion.

Antidotes for Barbituric Acid Poisoning—If acute poisoning with barbiturates is due to taking the drugs in large quantities by mouth, gastric lavage should be employed immediately. If enough of the drug has been absorbed to produce a systemic effect, treatment should be directed primarily toward stimulation of the circu-

³⁸ Murray and Pitt, J. Pharmacol., 1912.
³⁹ D. Roberts, M. S. Tr. S. M. J. 25: 115 (Nov.) 1912.

⁴⁰ Janke, Ich. I. and Farkas, J. Monatsh. f. Psychiat. u. Neurol. 51: 1 (Oct.) 1912.

⁴¹ Wei, S. Am. J. M. Sc. 178: 970 (Sep.) 1929. Zerkas^{22b}

latory and respiratory systems. In this connection, epinephrine, ephedrine and caffeine have been employed effectively. They may be used alone or in two or more combinations.^{13a}

Picrotoxin has been shown to antagonize the action of barbiturates quite effectively.⁴² It tends to hasten the return of the body temperature to normal and stimulates respiration. It may be used in combination with small doses of ephedrine which helps to restore the normal blood pressure. Picrotoxin may be given in 0.5 per cent solution in distilled water or in physiologic solution of sodium chloride. Its properties are not affected by heating, and it is quite stable. In rabbits it has been given in doses of from 2 to 5 mg. at intervals of from five to twenty minutes until recovery has taken place. Man is somewhat more susceptible than laboratory animals, but it has been given safely in doses of from 5 to 10 mg. (Murrell, reported by Maloney^{39a}). It may be given intramuscularly or intravenously. In poisoning by the shorter acting drugs, it should be administered in fairly large doses and given frequently. With the longer acting drugs it should be given more slowly.²⁷

USES IN NEUROPSYCHIATRIC CONDITIONS

The barbiturates can be used with advantage in many neuropsychiatric conditions if the physician always bears in mind the various dangers that may be encountered. The use of the longer acting drugs for the control of epileptic seizures is quite common. The shorter acting drugs have been employed with advantage to control extreme convulsive states when the patient's life is in danger. Sodium amytal has effectively controlled status epilepticus resulting from a tumor of the brain, convulsions of eclampsia, tetanus^{36a} and convulsions due to strychnine poisoning.^{36b} The drug can be given intravenously, and the convulsions are controlled immediately.

In extreme cases the shorter acting drugs may be used to control pain. For this purpose they are, however, less practical than some other means, since the analgesic action occurs only when extremely large doses are given, which result in deep narcosis.^{13a}

The longer acting drugs may be used effectively in the treatment of a psychosis with cerebral arteriosclerosis. When they are given in small doses three or four times a day with potassium iodide, they serve the dual purpose of decreasing agitation and motor restlessness and also aid in the reduction of arterial hypertension. The shorter acting drugs should be used with extreme caution in these conditions, because the fall in blood pressure which usually accompanies their administration results in a feeling of dizziness and may lead to collapse. It should also be borne in mind that the longer acting drugs are eliminated slowly, and the cumulative effect, if administered over a long time, may lead to a delirious reaction.

The problem of securing restful sleep is one that constantly confronts the psychiatrist. There are a number of factors in connection with disturbances in sleep which should be carefully considered. Frequently one finds that a patient is unable to fall asleep on retiring, and his concern and fretfulness about this continue to keep him awake. When sleep finally comes he sleeps soundly the remainder of the night. In such cases a small dose of one of the shorter acting drugs is usually effective, as sleep is induced quickly and the patient

continues to sleep even after the drug has been eliminated, and awakens feeling refreshed.

If the patient's sleep is broken by frequent periods of wakefulness during the night, one of the longer acting drugs should be employed. These drugs act more slowly and should be given from one-half to one hour before the patient retires. If the patient retires immediately after taking the drug, he may become fretful because sleep does not come at once and work himself into an emotional state which makes sleep impossible. Since these drugs are eliminated rather slowly, they frequently cause the patient to feel somewhat "dopey" the following morning. This troublesome symptom can be partially eliminated by reducing the dosage to the absolute minimum that will produce the desired effect.

A third type of disturbance in sleep is frequently met in depressed patients, and more especially in those in the later decades of life. These patients frequently awaken in the early morning hours and find it impossible to fall asleep again. Several hours of depressive preoccupation spent in this way will undo the good effect gained from an active therapeutic program of the previous day, and the patient arises more depressed than ever. The shorter acting barbiturates afford an excellent sedative for these patients. If a small dose of sodium amytal or pentobarbital sodium is given when the stomach is empty, with half a glassful of tepid water, sleep is induced almost immediately. The drug is eliminated in a few hours and the patient awakens to start the day free from the tortures of his depression.

The barbiturates are useful in controlling extreme excitement. In this type of patient, the longer acting drugs are also less effective than the shorter acting drugs. Since they are absorbed rather slowly, the excitement may not be controlled for several hours and then only if large doses are given. In excited patients, in whom extreme exhaustion may prove fatal, shorter acting drugs may be given intravenously or intramuscularly, and deep narcosis closely resembling normal sleep can be induced in a few minutes.

Recently, deep narcosis of several days' duration has been advocated as a means of therapy in the psychoses,⁴³ and various members of the barbituric acid series have been employed for this purpose. The method has also been used in connection with induced fever during the narcosis⁴⁴ or psychotherapy at the time the patient is emerging from the narcosis. In most instances some gratifying results have been obtained. The marked improvement noted has been variously explained on a psychologic, physiologic and biochemical basis. Undoubtedly the rest both physical and psychologic, is an important factor. In addition to this, the psychologic phenomena⁴⁵ at the time the patient is emerging from the narcosis, when he is rendered more suggestible, gains a feeling of well-being and shows more confidence toward people in his environment, is an equally important factor.

The results reported from the use of prolonged narcosis seem to justify the use of this procedure in selected cases in which the psychosis does not respond to other means of therapy. When one studies in detail the pathologic findings resulting from barbituric acid poisoning, it becomes apparent that there is some permanent damage to most of the parenchymatous tissue

⁴³ Palmer H. D. and Paine A. L. *Am J Psychiat* 12 143 (July) 1932.

⁴⁴ Hackfield A. W. A Combination Therapy of Induced Narcosis and Fever. *Arch Neurol & Psychiat* 28 1169 (Nov.) 1932.

⁴⁵ Bleckwenn ^{36a}

of the body. Fortunately nature has been generous enough to supply most of the organs with sufficient tissue so that the clinical results in most cases are negligible. If the procedure is carried on for a long period or is repeated a number of times in the same patient, it is conceivable that function may be permanently impaired.

The phase of increased cooperation usually encountered when a patient is emerging from deep narcosis can also be produced by the administration of small doses of the shorter acting drugs without producing narcosis.¹² The intravenous administration of from 3 to 5 grains (0.2 to 0.3 Gm.) of sodium amytal usually produces a striking change in the attitude and reaction of the patient. A similar change, though less striking, may also be brought about by giving from 3 to 6 grains (0.2 to 0.4 Gm.) by mouth before meals when the stomach is empty.

I have treated thirty-seven patients by the administration of small doses of sodium amytal. Almost without exception I was able to obtain better cooperation from negativistic patients for a period of from several minutes to several hours after the administration of the drug. The administration of the drug was continued in doses large enough to maintain this stage of cooperation for a variable length of time, ranging from several days to three or four weeks in the majority of cases.

During the time the patient was under the influence of the drug, psychotherapy in the form of reassurance and suggestion was employed. In seventeen of these cases, improvement was shown from the time that the drug was first administered. Fourteen of the patients continued to improve but five left the hospital before they had recovered, nine made complete recoveries. In three the psychosis again became stationary, but at a higher level than before the treatment was started. In twenty cases the patients again regressed to their former level following the initial period of cooperation, and the treatment was discontinued.

Irrespective of diagnosis, I found that by studying the ideational content of these patients while under the influence of sodium amytal, they could be divided into three general groups. In group one the outstanding feature of the ideational content was extreme autistic thinking. In these patients the psychosis centered largely around themselves with no concern about their environment. Some of these were depressed and complained that they had committed terrible sins. They expressed no ideas of punishment, nor did they think that their sins would cause any trouble or discomfort to others. They showed no concern about their environment. Others thought that people in their environment would also suffer for their sins, but they were not particularly concerned about this. They were chiefly concerned because they had committed some moral wrong. In others of this group, the ideational trend was directed primarily toward the body with ideas of disfigurement or bodily changes but again with little concern regarding their environment. There were nine patients in this group two (22.2 per cent) showed slight improvement but seven (77.7 per cent) showed no change other than the transient period of cooperation while under the influence of the drug.

The second group consisted of six patients whose preoccupations were directed primarily toward their environment but whose ideational trend indicated that they were not in the least threatened by their environment in their present state. Several of these patients

were somewhat amused by things that happened about them but their affective reaction was somewhat shallow. Others talked about plans for the future in a way that could not be considered expansive, but at the same time expressed an undue confidence in themselves. Nothing in their environment seemed to threaten them in the least. Of these six, none recovered. Only one (16.7 per cent) showed slight improvement, and five (83.3 per cent) showed no improvement.

In the last group consisting of twenty-two patients, the outstanding characteristics seemed to be the decided threat which their environment held for them. Some of these patients were depressed, but, as contrasted with the first group they were more concerned about the punishment which they might receive from their associates while the moral issue of their preoccupations seemed to be secondary. Others showed no evidence of depression but felt quite inadequate and insecure in their environment, while still others showed rather definite paranoid trends. This group responded quite well to treatment, fourteen showed improvement as soon as the treatment was started, nine (40.9 per cent) made complete recoveries and five (22.6 per cent) left the hospital before recovery was complete. Eight (36.3 per cent) showed no improvement.

This short series of cases seems to indicate that the increased feeling of security and the increase in cooperation produced by small doses of sodium amytal may interrupt the course of a psychosis and hasten recovery. The treatment seems to be particularly suited to those patients who feel that their environment is threatening their welfare.

CONCLUSIONS

1 Though usually employed for their sedative action, the barbiturates influence almost every system of the body, and their various side actions should be considered in relation to the general condition of the patient.

2 The longer acting drugs are eliminated slowly, and the cumulative effect of long-continued usage may lead to a delirious reaction or to other toxic symptoms.

3 The psychologic reactions, which are readily induced by the shorter acting drugs, usually help in gaining cooperation from the patient and may aid in interrupting the course of a psychosis and hasten recovery.

4 If the drug is given over a long period, the histologic changes produced by the administration of large doses may lead to permanent impairment of function.

ABSTRACT OF DISCUSSION

DR W. J. BLECKWEN, Madison Wis. Being in a great measure responsible for the intravenous use of barbiturates in neuropsychiatry I feel justified in reporting work covering a period of five years, during which more than 10,000 intravenous injections have been made. Practically all of the short and long action barbiturates have been studied and sodium amytal has been the most desirable of the barbituric acid derivatives now available. The following early conclusions have stood the test of time: 1 A prompt and prolonged hypnosis and narcosis can be obtained in all psychotic individuals. 2 A controlled hypnosis for psychologic study can easily be developed in any psychiatric case. 3 A restoration of a normal sleep cycle in acute excitements enhances the rapid recovery in these cases. 4 The exhaustion states associated with acute toxic conditions which are often fatal can be avoided by periodically induced narcosis. 5 Convulsions associated with tetanus, eclampsia, strychnine poisoning and status epilepticus can be completely controlled. 6 The method as to dilution and rate of injection and criterion of dosage in each individual case described in my first communication, is not

paramount importance. All the disturbing untoward reactions with the great fall in blood pressure are thereby avoided. 7 Intravenous barbiturate therapy is hazardous in cases presenting advanced arteriosclerosis, myocarditis and severe hypertension. 8 In spite of favorable reports, I am opposed to narcosis prolonged for several days. The abnormal metabolism and body chemistry over a prolonged period will not enhance a restoration of normal cellular function. I believe that the production of a narcosis which more simulates the normal sleep cycle is of greater value. Several publications from members of our group are being made establishing the following additional facts: 1 A method of chemical psychoanalysis. 2 A method of investigation in criminal cases. 3 The intravenous use of coramin, caffeine, and epinephrine as an antidote in barbiturate necrosis and the control of the depth of hypnosis induced by sodium amytal by the same drugs. I wish to warn against the general use of barbiturates as practiced. A perfectly good series of drugs can be abused by being employed in every conceivable condition. They are toxic, they are not analgesic, and they have a limited usefulness. They should be used only in conditions in which they are known to be beneficial. My only criticism of this excellent presentation is the author's criterion of dosage, in that he advocates starting with the dosage recommended by the manufacturer. I believe that the individual dose must be established in every case.

DR. WALTER FREEMAN, Washington, D. C. At St. Elizabeth's we have been using sodium amytal for the purpose of bringing our catatonic patients back into contact with reality. In their catatonic state they are inaccessible and one cannot carry out any satisfactory therapeutic procedure beyond the physical ones. Sodium amytal renders them accessible so that they can discuss their problems and so that the physician can apply the proper therapeutic measures.

DR. ALFRED B. MAGNUS, Chicago. Dr. Bleckwenn's assertion that the Wisconsin group was pioneering in prolonged sleep therapy does not exactly correspond with the history of sleep therapy. To Klaesi, who in 1920 systematized the method of producing prolonged sleep credit goes for the work in modern psychiatry. As a matter of fact instances of cures through the induction of a state of stupor in mental patients have been described in the literature since 1870. Bleckwenn, of course, is credited with having started the use of sodium amytal a few years ago. In 1928 I had the opportunity of observing the work of Lutz in Zurich in prolonged sleep therapy with dial and morphine-scopolamine combination. I have since followed this method with some modification. Since the work of Klaesi a number of barbiturates have been tried, most of them meritorious but all of them possessed of some disadvantages. Dial may be classed as one of the slow acting drugs, but I do not fully agree with the objection to the slow acting drugs in narcosustained therapy. The slower or more rapid action is not indicative of the property of the drug as much as of the method of administration. In my work alcoholic and drug addicts and borderline and psychiatric cases were treated. The former were treated for four or five days and the latter two groups for ten days. If properly used and under careful nursing supervision, I consider dial therapy safe. The urinary reduction is frequently encountered. Even if the drug is given in small doses, the average patient will have between three and ten reductions in ten days. Catheterization therefore sometimes becomes a routine procedure. The next important complications to guard against are bronchopneumonia and shock. It would seem that the drug affects directly the capillaries of the bronchial tubes leading to a certain amount of congestion. Preexisting pulmonary conditions, acute or chronic, are important contraindications to the use of barbiturates.

DR. CARL P. WAGNER, Hartford, Conn. I have found sodium amytal the most effective of the drugs. My policy has been, when administering the drug by mouth, to start with the dosage recommended by the manufacturer and then to increase it or decrease it depending on the reaction of the patient. This problem presents itself if the drug is given intravenously, because the action of sodium amytal is so rapid that one can determine how much to give while the needle is still in the

vein. Frequently it is not necessary to give more than 1½ grains (0.1 Gm.) or perhaps 2 grains (0.13 Gm.) of sodium amytal to get the desired response. As an antidote for barbituric acid poisoning I have used coramin but have not had the degree of success described by Dr. Bleckwenn. I used it intramuscularly rather than intravenously. Of course, in the scale of toxicity that has been worked out by Dr. Barlow, dial comes well down the scale as being a relatively nontoxic drug. I prefer to use the shorter acting drugs because I can get the peak of reaction in a short time. When the longer acting drugs are used, the maximum reaction does not occur for an hour or two hours after the drug has been given. This is not the case with the shorter acting drugs. They enable one to control patients a little better although they may be a little more toxic than dial. It was stated that the principal toxic effect of the barbiturates has been on the respiratory system. This is quite true. I have had some experience with the toxic effect on the heart. In one instance a woman aged 60, with a blood pressure of 140 systolic and 80 diastolic, received 1½ grains of nembutal and developed an auricular fibrillation. In regard to respiration, I might add that with the use of the longer acting drug the reaction that has been described as most typical is that of pulmonary congestion and edema, which may terminate fatally. The shorter acting drugs act more directly on the respiratory center and cause death rather suddenly. I have never seen an instance of addiction to barbiturates in the same sense that one becomes addicted to morphine. Patients do develop a tolerance for barbiturates and the use of barbiturates becomes a habit like a good many other things. They can be withdrawn without severe withdrawal symptoms.

COLPECTOMY

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Colpectomy is an operation which has fallen into an undeserved oblivion in this country largely because it involves the complete anatomic and physiologic loss of the vagina. However, simplicity of performance, safety, uniformly good results, and applicability to conditions not amenable to any of the reconstructive types of operation insure for it a permanent place among useful surgical procedures.

LITERATURE

In Europe, colpectomy enjoys considerable popularity, in America it is seldom employed and the indications for the operation as well as the technique of the procedure and its modifications have received scant mention in the literature. Procedures more extensive and much less uniformly satisfactory are sometimes attempted in patients in whom colpectomy is definitely indicated.

Le Fort¹ in 1876 first described the central type of partial colpectomy for prolapse. His patient, aged 48 years, had a marked prolapse. He performed central colpectomy only at first and obtained a satisfactory result, but he noted relaxation of the perineum and in order to prevent any possible recurrence he subsequently performed a perineal repair. Earlier attempts to treat prolapse of the uterus surgically consisted in narrowing the vaginal orifice anteriorly or posteriorly or in closing the orifice by suturing together the labia. These methods were all unsatisfactory and resulted usually in recurrence.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

¹ Le Fort, Leon. Nouveau procede pour la guérison du prolapsus uterini. *Bull. gen. de therap.* 42: 337, 1877.

In the French literature, Brocq and Nora,² Dieulafe,³ Dujarier,⁴ Laurentie⁵ and Petit-Dutailh⁶ among others make the operation the subject of complete discussions.

Payne⁷ credits Simon with the original use of total colpectomy in 1885 for intractable vesicovaginal fistula.

In American literature, little reference is made to colpectomy. Baer and Reis⁸ report 14 colpectomies in 212 operations, and Phaneuf⁹ 13 colpectomies in 183 operations for prolapse of the uterus. Others¹⁰ have merely mentioned the operation in a general discussion of prolapse and usually assign it a negligible place among useful surgical procedures.

INDICATIONS

1 Prolapse in the aged constitutes the most frequent indication for colpectomy. In old and debilitated women in whom a short intervention under local anesthesia alone is feasible, this operation offers a maximum chance for cure with little or no risk.

The onset of sexual old age in the female cannot be accurately defined in years. Certainly there could be little objection made to the loss of the vagina after the age of 70, and the menopause would probably mark the limit below which the operation would be contraindicated except under very unusual circumstances. Between these limits the selection of this operation would depend on the social status of the patient, her physical condition, the feasibility of performing some more conservative procedure, and finally, but not of least importance, on the consent of the patient herself after all aspects of the operation have been carefully explained to her.

2 After hysterectomy the recurrence of prolapse with cystocele or rectocele, or both, is tremendously difficult to treat. Fortunately, such recurrences have been encountered with relative infrequency since the abandonment of hysterectomy alone, either abdominal or vaginal for the treatment of prolapse. Supplemented by adequate reconstruction of the pelvic supports, abdominal and vaginal hysterectomy seldom result unfavorably when used within their limitations in the treatment of prolapse.

When preservation of the vagina is a very important consideration, this type of recurrent prolapse may sometimes be successfully treated by the Payne⁷ operation or by fixation of the dome of the vagina either into the abdominal wall as described by Sloan¹¹ or into the pelvic wall on one side as in the Knapp¹² operation supplemented in either instance by anterior and posterior colporrhaphy. Often however, and especially in

older patients, or when other perineal operations have been performed unsuccessfully previous to hysterectomy, the anatomic structures are so distorted and inadequate that any operation less certain than colpectomy to result in cure would be inadvisable.

3 Recurrences after the Watkins-Wertheim interposition operation for prolapse and cystocele may sometimes be best handled by hysterectomy and colpectomy.

4 Vaginal hernia is rare but should be considered in all cases of prolapse and whenever a mass bulges into the vagina. Phaneuf,⁹ Ward,¹³ Douglass¹⁴ and others state that vaginal hernia is present with prolapse much oftener than is thought and that it is among the most common causes of recurrence after operations for prolapse, others hold that it occurs very infrequently.

Uncomplicated vaginal hernia may be successfully treated by conservative operation.¹⁵ When the hernia recurs after hysterectomy, when intra-abdominal operations are contraindicated on account of age or for other reasons and the hernial defect is too great to be repaired by conservative vaginal procedures, or when the hernia is large and is a part of an extensive prolapse, total or partial colpectomy after ligation of the sac is often the procedure of choice or the only alternative that offers a reasonable prospect of cure.

5 When vaginal hysterectomy is performed for prolapse, efficient reconstruction of the perineum may be impossible on account of marked atrophy or extensive destruction of tissues. If there is not sufficient contraindication to vaginal obliteration, colpectomy as an adjunct is preferable to a perineal reconstruction which would offer little prospect of permanent cure.

6 Prolapse in nulliparous women is often the result of congenitally defective perineal structures. When effective repair cannot be accomplished, or after the failure of conservative surgical procedures as in Shoemaker's¹⁶ patient, colpectomy may be necessary.

7 Payne⁷ states that intractable vesicovaginal fistula was treated by Simon in 1885 by colpectomy. Modern methods of handling these conditions largely preclude the necessity for colpectomy.

8 Vaginal neoplasm is a rare condition when its surgical treatment involves a very extensive denudation of the vagina, complete or partial colpectomy may be useful.

TYPES OF OPERATION

Colpectomy may be total or subtotal.

Subtotal Colpectomy—The operation described by Le Fort¹ is the classic procedure of this type. It was devised for the treatment of prolapse, the uterus being left in place. It provides for the drainage of the secretions from the uterus and cervix by the formation of a transverse cavity beneath the cervix, which communicates at each end with two laterally placed canals leading to the surface at the vaginal orifice. Such provision for permanent drainage is essential in all cases in which the uterus is left in place, even when the menopause has been passed.

In the Le Fort operation two rectangular areas one on the anterior and one directly opposite on the poste-

1. Le Fort, C. C. Technique of Repair of Female Pelvic Defects (Vaginal Hernia) and Rectocele. *J. A. M. A.* 79: 707-712 (Aug. 26) 1922.

2. Dieulafe, M. J. Prolapsus genital total chez une femme très âgée. Traité par l'opération de Le Fort. *Bull. Soc. d'obst. et gynec.* 18: 47-5 (Nov.) 1929.

3. Dujarier, Charles, and Target M. Technique opératoire de la colpectomie totale dans le prolapsus complet des femmes âgées. *J. de chir.* 25: 281-294 (1925).

4. Laurentie, J. Traitement du prolapsus genital complet chez les femmes âgées. *Cynec. et obst.* 17: 379-381 (1927).

5. Petit-Dutailh, Paul. Modifications au procédé de cloisonnement vaginal de Le Fort. *Gynecology* 30: 152-159 (March) 1931.

6. Payne, R. I. Genital Prolapse Following Total Hysterectomy. *Arch. Surg.* 20: 67-72 (April) 1930.

7. Baer, F. I., and Reis, R. A. Immediate and Remote Results in Cases of Prolapse. *Am. J. Obst. & Gynec.* 16: 446 (Nov.) 1924.

8. Phaneuf, J. E. Vaginal Operations in the Treatment of Uterine Prolapse, Cystocele and Rectocele with Special Reference to the Interposition Operation. *New England J. Med.* 201: 875-880 (Oct. 31) 1929.

9. Mason, J. C. Surgical Treatment of Uterine Prolapse. *Minn. Med.* 12: 170 (Feb.) 1919.

10. Frank, J. T. The Treatment of Cystocele, Rectocele and Uterine Prolapse. *Am. J. Obst. & Gynec.* 5: 81 (Jan.) 1916.

11. Sloan, J. L. Re-Lit of Radical Surgical Treatment of Prolapse in the Nulliparous. *Gynec. and Obst.* 1: 1-2 (June) 1924.

12. Knapp, D. R. Repair Following Hysterectomy. *Norwest Med.* 27: 1-2 (May) 1925.

13. Ward, C. C. Technique of Repair of Female Pelvic Defects (Vaginal Hernia) and Rectocele. *J. A. M. A.* 79: 707-712 (Aug. 26) 1922.

14. Douglass, F. M. End Results of the Vaginal Hysterectomy and Watkins-Wertheim Interposition Operation in Prolapsed Uterus. *Ohio State Med. J.* 23: 983-985 (Dec.) 1927.

15. Mason, J. C. and Simon, H. E. Vaginal Hernia. *Surg. Gynec. & Obst.* 47: 36-41 (July) 1928.

16. Shoemaker, C. E. Treatment of Prolapse in the Nulliparous. *Surg. Gynec. & Obst.* 21: 534 (Nov.) 1923.

rior wall of the vagina, are completely denuded of mucosa. The upper limit of each rectangle should not extend beyond a point 2 cm. below the cervix, the lower limit posteriorly corresponds to the mucocutaneous junction, anteriorly it extends nearly to the urethral opening. The width of each rectangle should be such that the mucosa remaining on each side will form a canal approximately 1 cm. in diameter. Bleeding is carefully controlled and the denuded rectangles are then accurately apposed and sutured together from above downward with interrupted catgut sutures. A few strands of silkworm sutures are used for a drain. After the operation is completed, fluid injected into either of the lateral canals should pass upward, across the subcervical space and escape through the canal on the opposite side. A perineal repair when indicated should be performed as a part of the colpectomy. A curettement and any cervical treatment indicated should be performed first.

Total Colpectomy—When the uterus has been removed previously or coincidentally with the operation, provision for drainage is not necessary and the entire vagina may be obliterated.

In the technic described by Dujarier and Larget⁴ and others, a vertical midline incision is made through the vaginal mucosa, from just beneath the urethral meatus, extending over the vaginal dome and down the posterior wall to the midfourchette. The vaginal mucosa is completely removed laterally and the cavity obliterated by suturing together the anterior and posterior walls. A small rubber tube or bundle of silkworm sutures provides drainage from the upper portion of the cavity to the surface.

Numerous objections may be made to this method of total colpectomy.

1 It does not include reconstruction of the perineum, a step very essential for maximum support, as was pointed out by Phaneuf and Brocq. Without reconstruction of the perineum, the direction of the vaginal scar is directly downward, with perineal repair, the direction is more nearly horizontal and provides maximum resistance against intra-abdominal pressure.

2 The lateral fascias and remnants of the uterine ligaments are not utilized to support the bladder, which is allowed to sag back against the rectum. The approximation of the anterior to the posterior wall of the vagina is in the direction of the weakest structures and does not utilize the much stronger and heavier tissues of the lateral walls.

3 The removal of the vaginal mucosa in the directions made necessary from the type of incision employed does not provide maximum ease and accuracy of separation and is opposite in some portions to that which is familiar to the surgeon.

It should be emphasized, therefore, that perineorrhaphy is an essential step when the perineum is deficient and it is suggested that partial anterior and posterior denudation with anterior and posterior reconstruction be done first, then the denudation completed and the cavity obliterated. The operation as modified is not deprived of its simplicity to any appreciable extent and it is made much more efficient.

MODIFIED TOTAL COLPECTOMY

1 Under sacral anesthesia a vertical incision is made through the vaginal mucosa from just beneath the urethral meatus and extended well above the cystocele. The vaginal mucosa is elevated well laterally and two

or three sutures are deeply placed to bring the lateral tissues across beneath the urethra and lower part of the bladder.

2 The posterior vaginal mucosa is elevated, and the levator muscles and adjacent tissues are exposed and sutured together as in the usual perineorrhaphy.

3 The remaining vaginal mucosa is then removed down to the mucocutaneous junction. In the presence of marked cystocele the ureters will drop well downward and backward but will not be easily injured if their altered position is borne in mind. Opening of the culdesac, which may occur at this time, is without danger. Bleeding is accurately controlled by ligatures and hot packs.

4 The cavity is obliterated from above downward by a series of sutures of doubled heavy chromic catgut. They are placed deeply in the lateral structures and include only a very superficial bite in the anterior and posterior walls as they are passed across them. The ureters should be carefully avoided in placing the upper sutures. When these sutures are tied, the lateral walls are approximated.

5 Drainage is very essential to prevent the accumulation of blood within the cavity. Such an accumulation produces an elevation in temperature and pain, and

Results of Total and Subtotal Colpectomy Reported by Light Operators

	Number of Cases Reported	Deaths	Number of Patients Followed Up	Recurrence
Baer and Reis *	14	0	10	0
Brocq and Nora *	23	0	9	0
Delafield *	1	0	1	0
Dujarier *	15	0	15	0
Laurentie *	8	0	8	0
Mombach *	1	0	1	0
Phaneuf *	13	0	13	1
Simon	2	0	2	0
Totals	93	0	53	1

* Mombach, C. Etiology and Treatment of Prolapse of the Uterus and Bladder. Ohio State M. J. 16: 416-418 (June) 1920.

as it dissects downward to the surface it weakens the scar. This drainage is provided by a small tube or a bundle of silkworm sutures extending well up into the top of the cavity. It is left in place for eight or ten days.

6 After the vaginal cavity is obliterated down to the mucocutaneous junction, the mucocutaneous edges are accurately approximated, the drain is allowed to pass out posteriorly or in the midportion. A retention catheter may be left in the bladder for ten days.

RESULTS

In a series of ninety-two patients on whom various types of colpectomy had been performed by eight different operators, there were no deaths, as shown in the accompanying table. A postoperative hemorrhage occurred in one patient reported by Laurentie and a hemotoma in one of Dujarier's patients. One of Phaneuf's patients developed a low grade infection and accounted for the only recurrence in fifty-nine patients who were followed up.

These results are particularly striking when the advanced age and the poor physical condition of most of these patients is considered and in view of the results obtainable by any other type of operation.

SUMMARY AND COMMENT

1 Colpectomy is an operation which is easily performed, yields uniformly good results and is safe. Its

greatest objection is that it involves the functional loss of the vagina but when this is a lesser or not a serious consideration, it is an operation which insures good results with minimum risk in a number of conditions not readily amenable to less radical procedures

2 Colpectomy may be subtotal, as in the Le Fort operation, which permits the uterus to be left in place, or total if the uterus is removed

Simple denudation of the vaginal mucosa and approximation of the anterior to the posterior walls does not provide the most satisfactory operation for total colpectomy and does not accomplish maximum strength for the repair. The inclusion of anterior and posterior colporrhaphy and utilization of the strong lateral tissues for support are of importance

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ABSTRACT OF DISCUSSION

DR J C MASSON, Rochester, Minn. I am satisfied that colpectomy is utilized probably in a haphazard or modified manner, much more frequently than the literature would indicate. I frequently have seen large postoperative vaginal hernias that had followed abdominal or vaginal hysterectomy. Adequate support had not been provided at the vault of the vagina, and in many cases no attempt had been made to repair an extensive laceration of the perineum. In many of these cases, any attempt at reconstruction means partial vaginectomy or colpectomy. If the vault of the vagina is fixed into the anterior abdominal wall or to the side of the pelvis, the condition will be helped only temporarily. There will be a definite tendency toward recurrence of the cystocele if the patient is much on her feet. Most of the patients are well past the menopause, and on account of the unnatural dryness and thickening of the vaginal mucous membrane, from exposure and irritation for many months, sexual relations have not been satisfactory and in most cases have been entirely discontinued. The patient raises no objection to radical operation provided there is a reasonable certainty that relief can be obtained from the uncomfortable bearing-down feeling protrusion of the parts, irritable bladder, and difficulty in emptying the lower part of the bowel. The patient and her husband, however, should thoroughly understand, before the operation is undertaken, what the postoperative condition will be. The operation is also indicated in many cases of procidentia of elderly women. It must be remembered that many patients who are 70 years of age are going to live at least ten more years. The operation can be done more quickly and more safely and will result in more relief to the patient than so called less radical operations that require extensive plastic procedures, or abdominal incisions and the long continued use of a pessary. I have had no experience with the Le Fort procedure but if patients are averse to losing any of their organs, if the case is one of vaginal prolapse as a result of congenital weakness of the muscles of the pelvic diaphragm, or if the patients do not contemplate marriage it might be satisfactory. I think however that complete colpectomy, as advised by Dr Simon is a better operation and has much to recommend it. The operation can be done satisfactorily in conjunction with application of the Mayo principle of giving support to the bladder after removal of the uterus and in conjunction with high approximation of the levator ani muscles before the attempt is made to obliterate the vaginal canal. I should like to add here however that the reason for post-operative hernias and for recurrence of cystocele and rectocele following the Mayo type of operation is generally the result of the surgeons not having taken sufficient pains to anchor the approximated anterior ends of the broad ligaments under the symphysis pubis and to effect partial obliteration of the cul-de-sac and shortening of the uterosacral ligaments. If general anesthesia is contraindicated this operation can be done with a minimum amount of risk under low spinal anesthesia sacral block or local infiltration. If advisable patients can be allowed to be out of bed in about half the time necessary following the more frequently used operations.

THE PREVENTION OF COMPLICATIONS IN THYROID SURGERY

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The prevention of complications, both immediate and remote, following thyroidectomy is a subject of extreme importance to those interested in thyroid surgery. The statistical study of operative records reveals the number of patients who were successfully operated on, but it tells nothing of the patients whose lives perhaps hung in the balance for hours or days. An error in judgment either at the operating table or later may be responsible for the development of complications that greatly alter mortality statistics. Although such a mistake may not result in the death of the patient, it may change his whole future health and welfare.

In perhaps no field of surgery are complications more prone to develop than following operations on the thyroid. This is so true that there are few surgeons who have not experienced most of the unfortunate sequelae at some time during their careers. It has been my misfortune to have run the gantlet and, fortified with this knowledge and experience, I offer the following suggestions.

Complications following thyroidectomy may be divided into three classes: immediate, delayed and remote.

In the first group, immediate complications, are found those accidents which occur at the operating table, they may be listed as follows:

- 1 Injury of the recurrent laryngeal nerve
- 2 Hemorrhage
- 3 Injury or collapse of the trachea
- 4 Air embolism
- 5 Acute hyperthyroidism
- 6 Anesthesia complications

The second group, delayed complications, is as follows:

- | | |
|-------------------------------|------------------------|
| 1 Tetany | 9 Tracheal obstruction |
| 2 Hemorrhage | 10 Anoxemia |
| 3 Hyperthyroidism | 11 Hematoma of wound |
| 4 Tracheitis | 12 Mania and psychosis |
| 5 Pneumonia | 13 Shock |
| 6 Cardiac failure | 14 Glycosuria |
| 7 Wound infection | 15 Embolism |
| 8 Temporary nerve involvement | |

The third group, remote complications, includes:

- | | |
|------------------------------|-------------------------------|
| 1 Persistent hyperthyroidism | 5 Skin adhesions |
| 2 Recurrent hyperthyroidism | 6 Hypothyroidism and myxedema |
| 3 Cardiac failure | |
| 4 Tetany | 7 Progressive exophthalmos |

Obviously, in this short dissertation it is impossible to dwell in detail on any save the most important of these problems.

IMMEDIATE COMPLICATIONS

1 During the past four years it has been my good fortune to have avoided successfully injury to the recurrent laryngeal nerve. Few surgeons performing any number of thyroidectomies have avoided injuring one or even both nerves at some time in their experience.

From the Jackson Clinic
Read before the Section on Surgery, General and Abdominal at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1921.

The most frequent causes of this in their order of importance are the placing of hemostats too low on the lateral borders of the gland, and, likewise, on the lower poles, too great haste, a wet operative field obscured by numerous hemostats, substernal and intrathoracic goiters with distortion of the anatomy, and ligation of the inferior thyroid artery too close to the gland. The greatest care should be used in placing hemostats on the lower lateral and inferior poles preparatory to resecting the gland. Probably, however, the majority of nerve injuries occur after the surgeon has begun resecting the gland, particularly in that type which is extremely friable and vascular. In an effort to secure hemostasis, the friable gland crumbles away and a comparatively simple operation suddenly becomes a serious one. Hemorrhage must be controlled and, at the same time, injury to the nerve avoided. The failure of the surgeon to place his hemostats sufficiently high on the lateral walls at the start accounts for the majority of complications in thyroid surgery. If the gland is resected from within, leaving only a thin but sufficiently deep outer shell not only will nerve injury be avoided but hemorrhage from within the capsule can always be controlled.

2 The most frequent cause of serious hemorrhage results from the tearing of the lateral or middle thyroid veins in elderly persons with substernal goiters. Experience teaches one to be on guard for this dangerous sequela. As soon as possible these veins should be isolated and, if necessary to elevate the goiter they should be ligated and divided at once. The method of running the index finger down along the lateral and inferior border of the goiter in order to free adhesions and to elevate the goiter should be avoided, as occasionally a friable vein will be caught and torn by the finger. Rather the goiter should be elevated by careful traction, the capsule being dissected with the scalpel, and the veins being ligated as they are encountered. If three hemostats are placed on the superior thyroid artery and vein and they are divided between the second and third and immediately sutured with number two plain gut, these vessels will cause little concern. Serious bleeding from within the capsule can be controlled with the index finger pressing upward and inward along the lateral border of the gland.

3 Injury to or collapse of the trachea is seldom serious and may be avoided by careful and not too rapid dissection in a dry field. In our clinic, two fatal cases of collapse of the trachea occurred preoperatively within the past year. This was a most unusual and new experience, but it proved to me that such complications may occur following operation and are not necessarily dyspnea resulting from nerve injury. In one of our cases the trachea collapsed a few minutes after the patient was admitted to the hospital and before a tracheotomy could be performed. The other occurred on the table just before operation, and although tracheotomy was performed at once, the patient lived only a few hours. Both patients had large intrathoracic goiters.

4 I have seen four cases of air embolism, two of which occurred in my service, with a single recovery. As one patient was being taken from the operating room, she suddenly coughed violently and tore loose a ligature on the anterior jugular vein. Although the dressing was immediately removed and the wound reopened, she died in a few seconds. The second case occurred while an attempt was made to locate the source of a delayed hemorrhage. In this instance the patient's

head was immediately lowered and oxygen with carbonyl dioxide administered. She remained unconscious for seven hours and recovered with a partial hemiplegia that later cleared up. The absence of valves in the thyroid veins and their tendency to remain patent makes it important to ligate every vessel carefully.

5 Acute hyperthyroidism on the table was a common complication before 1922 but has been rare since the advent of compound solution of iodine. Proper preoperative preparation should avert it but if it occurs the operation should be stopped and the patient brought under control with iodine, ice bags and fluids in his room.

6 It has been my good fortune to have had but one serious complication that I might attribute to the anesthetic; this was in a case of pneumonia. Some years ago procaine hydrochloride reactions occasionally occurred, but with the development of the superficial nerve block method and with the preoperative use of 10 grains (0.6 Gm) of sodium barbital this complication has been eliminated.

DELAYED COMPLICATIONS

During the past seven years I have not seen a case of tetany. Experience taught me that tetany as well as nerve injury resulted largely from dissecting too far down the lateral walls of the gland. Leaving a sufficient shell of gland and capsule will prevent tetany.

Delayed hemorrhage may occur as late as one month following operation and is usually the result of a low grade wound infection. Hemorrhage the second or third day, however, is the result of improper hemostasis.

Sufficient iodine by mouth, by duodenal tube, by rectum or by vein fluids, ice bags, sedatives, oxygen, good nursing and psychology will usually control hyperthyroidism.

Tracheitis is prevented by careful operative technique in avoiding trauma of any sort to the trachea and by the use of a stem tent, codeine and atropine. In elderly persons it is safer to perform a two-stage operation.

Cardiac failure remains the most serious sequela in long-standing cases of toxic adenoma and exophthalmic goiter. The controversy still persists as to whether digitalis does harm or good in the preparation and after-care of the former. Some of us believe that we have saved many lives with digitalis, Plummer and others feel they have saved lives by not using it.

Wound infection, when it occurs, is most annoying because it may take weeks to clear up. Fortunately it is rare and in my experience is less often seen when no drainage tube is used. Allowing serum to collect for a day or two without probing will often invite trouble.

Temporary involvement of the nerve may occur as a result of edema of the tissues or trauma, but it is seldom of serious import.

Much could be said about tracheal obstruction and anoxemia and about their prevention and treatment with oxygen therapy. I have saved several critical cases with the oxygen tent or merely by inserting a nasal catheter and connecting it with an oxygen tank.

Mania and psychosis are occasionally serious and even fatal sequelae of thyroidectomy. I know of no way of anticipating or avoiding these conditions, and their treatment is largely that of a psychosis from other causes.

The avoidance of postoperative shock has been ably elaborated on by Crile and needs no further mention here.

All goiter cases should be carefully examined preoperatively for the possibility of glycosuria. Occasionally, a true diabetes but more often an acute glycosuria will be precipitated by thyroidectomy.

REMOTE COMPLICATIONS

I have seen tetany develop as late as eight months after thyroidectomy.

In burned out cases of exophthalmic goiter or in advanced toxic adenoma, cardiac failure is apt to occur in from one to five years following thyroidectomy.

Rarely in this surgical age is postoperative myxedema encountered, although mild grades of hypothyroidism are observed and even desired by some surgeons.

Recurrent hyperthyroidism remains the most frequent and serious remote postoperative complication, or, rather, persistent hyperthyroidism, because this condition usually but not always results from a failure to remove sufficient tissue at the time of the first operation. The frequency of recurrence runs as high as 5 per cent even at the best thyroid clinics. In some instances, several recurrences develop in a single patient.

Sufficient time has not yet elapsed, but during the past three years I have found a method that more nearly solves this problem of recurrence than any other that I have yet tried. With but a single recurrence during this period I have not been tempted to consider denervation of the suprarenal glands, as advocated by Crile. The advent of electrosurgery has in my opinion revolutionized the technique of thyroidectomy. Not only is it possible to remove more thyroid tissue with a greater degree of safety than with the scalpel, but it is possible to coagulate all but a small fraction of the remaining gland, thus producing fibrosis and scar tissue and permanence of cure. Strangely enough, myxedema does not develop, but the patient proceeds to a normal convalescence with greater rapidity.

To prevent persistent and recurrent hyperthyroidism, a careful postoperative regimen should follow, with iodine for six months, high caloric diet, permanent restraint from stimulants and proper rest. Likewise, in all cases of exophthalmic goiter, septic tonsils if present should be removed some months after thyroidectomy. Electrosurgery, however, has been the most important factor in overcoming this most serious indictment of thyroid surgery.

CONCLUSION

One cannot improve on the words of Dr. Charles Mayo, who stated that exophthalmic goiter should never be considered as an emergency operation. Thus with a careful preoperative preparation and with the avoidance of undue haste in operating, the majority of complications in thyroid surgery will be prevented.

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ABSTRACT OF DISCUSSION

DR. ROBERT S. DINSMORE, Cleveland. There are several well established facts about thyroid surgery. There has been established a low mortality rate in all large thyroid clinics. Generally speaking the results of thyroid surgery are excellent. There is however as Dr. Jackson has pointed out a low residual morbidity rate which can be markedly lowered by the prevention of complications. Dr. Jackson has divided these into three groups and I feel that by far the most important are the early or the immediate complications. If one avoids a postoperative hemorrhage or injury to the recurrent laryngeal nerve or parathyroid bodies the morbidity rate will be fairly low. In case of severe hemorrhage one should take the operat-

ing team back, give the patient a light anesthetic and carefully enucleate the hematoma. The most distressing type of postoperative hemorrhage is one that comes from the inferior thyroid artery following the removal of an intrathoracic goiter. If after the removal of a large intrathoracic goiter a fixed cavity is formed the case should be treated by a secondary closure. It is quite true that most of these cavities are quickly obliterated by the lungs and the pleura but occasionally a large cavity extending well down into the chest will result. Extravasation or venous oozing into this cavity may take place with no outward or visible symptoms in the neck. The patient, however, will become very pale, the pulse will become very rapid, and there will be a slight widening of the mediastinal dulness. The extravasation may extend into the posterior or anterior mediastinum but almost invariably the result is fatal. The heart simply becomes strangulated. There is another rare type of postoperative hemorrhage that is occasionally seen. On the third or fourth day after a thyroidectomy, the patient may develop a slightly brassy character to the voice, and the laryngeal examination will show an extravasation into one of the cords. This is not a complication that causes any trouble, as it usually clears up in a few days. I have had less trouble with the recurrent laryngeal nerves in cases in which I have dissected the gland from the outside, placing the clamps on the lower pole so that they stand erect in the wound, and placing the clamps on the superior pole from within outward. Dr. Jackson mentioned that the delirium of acute hyperthyroidism should be differentiated from the true manias or the psychoses. In all the cases of major psychoses that I have seen after an operation, the psychiatrist has been able to establish the fact that the patient had a previous psychosis in addition to the hyperthyroidism. The two points of importance about a patient with a major psychosis and hyperthyroidism are, first, that these patients should not be operated on near one of the acute exacerbations and second, that a guarded prognosis should be made as to the course of the psychosis. I believe that most of these patients present two separate clinical entities and that the psychosis does not follow the hyperthyroidism but that it is a major psychosis and hyperthyroidism.

INSULIN IN THE TREATMENT OF TUBERCULOSIS

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NEW YORK

The work summarized in this paper comprises more than eighty nondiabetic tuberculosis cases. Several New York tuberculosis specialists kindly referred volunteers from their charity services to receive the first treatment in Morristown, and Eli Lilly & Co., furnished insulin for this purpose. A preliminary announcement was previously published.¹ The observations were then extended in two parts which will be published in detail in separate papers. One of these comprised a series of twenty-six cases studied in the Valley View Sanatorium, Paterson, N. J. in collaboration with Drs. William E. Pottinger, Stephen A. Douglas and Earl Warren. The second comprised forty-five cases observed in the City Hospital Welfare Island, New York City in collaboration with Dr. James S. Edlin.

This work was a natural development from certain studies of diabetes. On the practical side I² was apparently the first to publish observations on the use of insulin in diabetic cases complicated with tuberculosis. Numerous authors since then have confirmed the fact that the results in such cases are revolutionized by insulin and the higher nutrition which it makes

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fourth Annual Meeting of the American Medical Association, Milwaukee, June 1, 1933.

1. Allen, F. M. J. M. Soc. New Jersey 20: 315 (April) 1932.
2. Allen, F. M. J. Medical Research 2: 534, 535, 536, 1922.

possible. Historically, the greatest numbers of tuberculosis cases and deaths among diabetic patients occurred under the earlier crude forms of treatment when the sugar was not controlled. The control of the sugar brought some degree of improvement, even though accomplished at the price of undernutrition, but the results nevertheless were highly unsatisfactory and the prognosis was usually bad. The revolution accomplished by insulin treatment has been such that I myself feel that the diabetic patient, properly treated, has a somewhat better chance than the nondiabetic patient with the same degree of tuberculosis. At any rate, the history of diabetic treatment seems to confirm the prevailing views concerning the importance of nutrition for resistance against tuberculosis.

On the theoretical side, I have since 1914 been publishing experimental and clinical evidence to prove that the internal secretion of the pancreas is related not merely to carbohydrate metabolism but to total metabolism and body weight. The first observations, made by comparisons of higher and lower diets, were confirmed after insulin was discovered by showing that the difference between high and low body weights in diabetic patients can be definitely measured in terms of insulin requirement. Reducing the body weight under other-

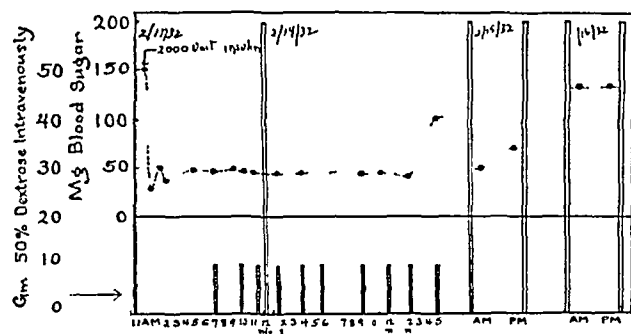


Chart 1—Prolonged storage of insulin in a 5.6 kg dog receiving one dose of 2000 units of insulin subcutaneously and successive intravenous injections of 10 Gm of dextrose.

wise constant conditions reduces the insulin requirement, and any marked increase of body weight is the most powerful means of increasing the insulin requirement. Insulin may therefore be regarded as a specific anabolic hormone. Moreover, the notoriously poor resistance of depancreatized animals and untreated diabetic patients to many infections demonstrates the importance of an adequate supply of insulin for normal resistance. Whether any raising of resistance is possible by a particularly liberal supply of insulin, in other words by administering insulin to nondiabetic patients, is a question to be decided. An analogy may be suggested with the administration of surplus quantities of vitamins for improving the resistance to tuberculosis. There are also reports in the literature favoring the use of insulin for other types of infections.

The first use of insulin for building up weight in nondiabetic patients was by Pittfield,³ Marriott⁴ and Barbour⁵ in 1923 and 1924. The first trial of insulin in nondiabetic tuberculosis cases was by Bauer and Nyiri⁶ in 1925. Since then a large literature has grown

up on this subject. Nearly all the European authors have used insulin in comparatively small doses for comparatively brief "fattening cures." Falta⁷ has rendered service in attracting attention to various phases of this subject, though he cannot be credited with priority. The belief has also been widely disseminated that insulin is suitable only for inactive tuberculous cases and that its use is contraindicated by active lesions, fever, hemorrhage and other complications. More recently, some authors have increased the dosage to 60 units a day or more and have extended the treatment either continuously or at intervals over several months. To Leggett and Callahan⁸ seems to belong the credit for most definitely breaking away from the old idea of "courses of insulin" and using insulin in dosage suited to the individual need and for the periods that seem individually advisable, sometimes for from three to six months.

As the processes of nutrition are so complex and obscure, theories should not venture far beyond proved facts. Insulin is evidently only one of many factors governing both appetite and nutrition. Hyperinsulinism is not necessarily synonymous with either hunger or obesity. Insulin or hypoglycemia may sometimes be accompanied by nausea instead of hunger. This reversal of rule is commonest in toxic states, but on the other hand some patients with fever and intoxication may respond to insulin with appetite and gain in weight, while some who are not toxic may develop no hunger and cannot be fattened with insulin. Before undertaking the work with human patients it seemed necessary to perform animal experiments concerning the possible toxicity of insulin and also the possibility of keeping the organism enriched with insulin. The observations of previous writers on the former point are not definitive. It is not safe to regard insulin as nontoxic in absolutely unlimited dosage, but, on the other hand, doses much higher than were ever needed in tuberculosis treatment can be given with no bad effects beyond what can be antidoted by moderate quantities of carbohydrate.

Physicians are inclined to regard the effects of insulin as limited to a few hours, but I⁹ have shown that, with large dosage, prolonged storage of insulin is demonstrable. Chart 1 illustrates these experiments, which will be reported in greater detail later. When such a small animal as a 12½ pound (5,670 Gm) dog receives such a large dose as 2000 units of insulin, protection from hypoglycemic symptoms requires no enormous dosage of carbohydrate but only 10 Gm at a time. The chief difference is that these protecting doses of dextrose must be continued for a day or two during which time there is evidently an excess of insulin stored in the body. These experiments illustrate not only the feasibility of artificial hyperinsulinism but also the fallacy of attempted ratios between carbohydrate and insulin, and other theoretical matters. The general principle that the combating of insulin shock depends less on the total quantity of carbohydrate than on the frequency of its administration will be found very valuable practically in the insulin treatment of both diabetes and tuberculosis.

In general, I have administered more insulin than has heretofore been given to nondiabetic persons, in the sense of the size of doses and the length of treatment. One man received 320 units a day with rapid

³ Pittfield R L On the Use of Insulin in Infantile Inanition New York M J 118 217 218 (Aug 15) 1923
⁴ Marriott W McK The Food Requirements of Malnourished Infants J A M A 83 600 603 (Aug 23) 1924
⁵ Barbour O Use of Insulin in Undernourished Nondiabetic Children Arch Pediat 41 707 711 (Oct) 1924
⁶ Bauer Richard and Nyiri W Med Klin 21 1456 1460 (Sept 25) 1925

⁷ Falta W Wien klin Wchnschr 38 757 758 (July 2) 1925
⁸ Leggett E A and Callahan F F Journal Lancet 51 563 570 (Sept 15) 1931
⁹ Allen F M Proc Am Physiol Soc 1932

gain of weight, but this was an exception. Treatment was usually begun with 5 units before each meal and increased to about 40 units three times a day, but individualization should be emphasized as the chief principle. There are individual peculiarities of insulin tolerance. Women are apt to take less than men. Toxic patients usually do not stand as large doses as the nontoxic, contrary to the rule in diabetes. The same individual may differ in his insulin requirement at different times. When small doses are unsuccessful, large doses will sometimes give results and vice versa. When a patient has flourished for several weeks or months on a certain dosage and has perhaps reached

Blood Sugar Curves Before and During Insulin *

Patient	Sex	Time	P M	A M	1st Hour	2d Hour	3d Hour
M T	♂	Before	196	112	184	105	116
		During	160	126	283	243	136
M P	♀	Before	130	101	169	126	122
		During	125	115	178	142	107
W D	♀	Before	115	97	103	126	94
		During	103	91	300	195	80
J R	♂	Before	142	112	180	195	137
		During	154	123	240	226	109
E M	♂	Before	180	107	230	140	133
		During	150	125	226	206	164
I C	♂	Before	142	102	0	0	0
		During	103	91	223	173	129

* P M one hour after ordinary supper, A M fasting 1st hour 2d hour 3d hour after ingestion of 100 Gm of dextrose

normal or slightly more than normal weight, he may begin to show sensitiveness in the form of insulin reactions or nausea and may continue to thrive only after the dose has been cut perhaps in half. The best results require study of such details, also training and skill in this particular method. The administration of insulin has thus been continued over eight months. The kind and quantity of the diet is also planned to suit the individual, but commonly a mixed diet containing liberal carbohydrate may be given, consisting of not only the usual three meals but also lunches between meals and at bedtime.

In character, the cases ranged from mild to moribund. Exact data can be given only in the detailed reports, but the majority were severe, active and febrile. The City Hospital work was hampered by lack of suitable control periods, the treatment in most cases being begun soon after admission and the results judged only by the general experience of the tuberculosis specialists with such cases. In the Valley View Sanatorium there was the advantage of prolonged and complete preliminary observations for comparison with the subsequent results under insulin. One general conclusion was that in a broad clinical sense insulin properly used is harmless. Reactions are usually easy to prevent and harmless if they occur. Fever is by no means a contraindication, though in far advanced cases the disturbances of insulin injections and increased feeding may elevate the temperature somewhat and thus be undesirable. Hemorrhage also need not be a contraindication except in a minority of sensitive cases, and some very good results have been obtained in this type. Rarely, urticaria or other symptoms may prove troublesome even to the extent of stopping the treatment. Intestinal lesions are more often an indication than a contraindication for insulin.

The administration of insulin to nondiabetic patients in such quantities and for such periods is an experiment in itself and a watch has therefore been kept for possible endocrine effects. Only one patient displayed any tendency to become too fat requiring artificial

regulation of calories. The others were automatically inhibited by the nausea and other symptoms previously mentioned. One question considered was whether the carbohydrate tolerance would change by reason of either stimulation or disuse atrophy of the patient's own pancreatic islands. With numerous dextrose tolerance tests we have confirmed the observation of some former authors that abnormally high results are rather common in tuberculosis. The accompanying table illustrates some of these figures and also the fact that they are apt to become considerably higher during the course of insulin treatment. Later tests showed however, that this is a temporary peculiarity passing off within a few days after discontinuance of the insulin, and in no instance has there been any evident tendency to the development of diabetes or any other endocrine disorder.

The most striking and obvious clinical result in a case of suitable type is a gain in appetite, weight, strength and spirits. This result is apt to be greatest in the mild or quiescent cases and to be less in proportion as fever and intoxication are greater but there are exceptions in both directions. A general summary is not very useful because of individual variations. Taking the City Hospital series for illustration, the forty-five patients showed an average gain of 25 pounds (11.3 Kg), ranging from a minimum of 3 pounds (1.4 Kg) to a maximum of 29 pounds (13.2 Kg) in females, and from a minimum of 5 pounds (2.3 Kg) to a maximum of 54 pounds (24.5 Kg) in males. In two cases there was weight loss of respectively 2 and 6 pounds (0.9 and 2.7 Kg) with insulin. Except in the very advanced cases, the weight and strength gained under insulin were entirely or largely retained after the insulin was stopped.

Chart 2 illustrates two of the best results in the Valley View Sanatorium series. The solid line represents the weight of a young woman, aged 26, with far advanced bilateral tuberculosis, severe cough and pro-

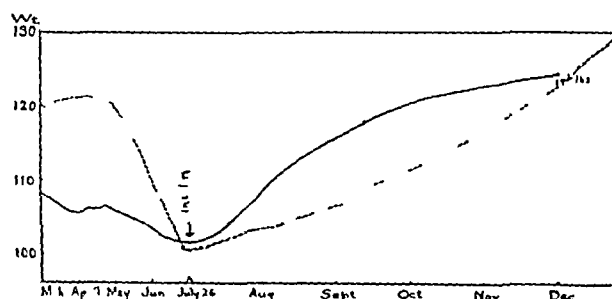


Chart 2—Best results in Valley View Sanatorium series. solid line weight of Anna T, aged 26. broken line weight of Frank C, aged 22.

fuse expectoration, temperatures of from 99.6 to 100.6 F, and a complication with violent attacks of sinusitis with daily purulent discharge. Other symptoms were severe headaches, flatulence, gnawing sensations in the abdomen, nausea and vomiting (diagnosis of hyperacidity and duodenal ulcer), general malaise, weakness, loss of weight and toxic appearance. During three months in the hospital downward progress in all these respects was demonstrated. The establishment of artificial pneumothorax on the left side did not bring any clinical improvement. With the beginning of insulin there was an immediate change. The indigestion and abdominal symptoms disappeared almost completely. The attacks of sinusitis subsided though some purulent discharge persists. The gains in strength, spirits and

general comfort correspond to the gain in weight. The x-ray reports seem more encouraging but must be confirmed by longer time.

The broken line represents the weight of a man, aged 22, who had been under observation for six years and in the hospital one year. He appeared greatly improved following phrenic section, but on transfer to the ambulant ward preparatory to discharge he had a serious breakdown with increase of cough and sputum, temperatures of from 100 to 101 F, lack of appetite and strength, and loss of 20 pounds (9 Kg), the condition being such that his death was expected soon. Under insulin treatment there was gain of strength and spirits corresponding to the gain in weight, the temperature fell and the sputum diminished. The improvement shown by roentgenograms was also very marked.

These examples are given only to illustrate the best results, and there are all other gradations from partial success to complete failure. I shall not go further into the clinical results, because this paper is intentionally written from the standpoint of metabolism. I shall therefore draw only one conclusion, namely that in a large proportion of tuberculosis cases ranging from quiescent to severe, the proper use of insulin can produce marked gains of weight, strength and spirits. Any further conclusions must be drawn with the aid of the tuberculosis specialists in the papers in which they collaborate. It is clearly recognized and has been emphasized from the beginning of this work that insulin is not a specific antibody or a cure of tuberculosis and is not expected to save inherently hopeless cases. On the other hand it may be permissible to state that the tuberculosis specialists engaged in this work have gained the impression of a beneficial effect of insulin as judged by clinical and laboratory results, and this interpretation appears plausible in view of the generally accepted importance of nutrition in tuberculosis.

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ABSTRACT OF DISCUSSION

DR F. F. CALIAHAN, Pokegama, Minn. I have been using insulin in the treatment of tuberculosis for four years. My attention was attracted to this treatment because of good results obtained in cases of combined tuberculosis and diabetes. Before insulin was discovered I felt that practically all cases of moderate severity with this complication were hopeless. After beginning to use insulin I found that diabetic patients handled their tuberculosis just as well as others of the same degree of severity. The dosage that I use is much lower than Dr. Allen's. I start with 3 units half an hour before meals and increase the dose slowly but have never given more than 15 units three times a day. The best results have been obtained in undernourished patients with anorexia and little or no fever. My experience in cases of acute tuberculosis presenting high fever has been disappointing. It is possible that a larger dose in some of these cases would prove helpful. A few patients with normal blood sugar showed traces of sugar in the urine during insulin treatment. I have been unable to account for this reaction. I agree with Dr. Allen that insulin is not a specific in tuberculosis. It has very definite limitations in the treatment of the disease but many cases are greatly benefited by its use. I think also that cases of anorexia and malnutrition due to other organic diseases should have the benefit of a course of insulin when they do not respond to other treatment. A man, 25, admitted with bilateral tuberculosis after twenty months' treatment in another sanatorium had a pneumothorax with typical signs of tuberculosis of the larva and cecum. He had been failing steadily. His physician suggested thoracoplasty, we compromised by changing from pneumothorax to oleothorax. In a few weeks the pus had disappeared from the left pleural cavity and there was definite improvement in

the contralateral lung. He gained weight very slowly until he was started on 5 units of insulin three times a day, the dosage being increased to 8 units. In a year he had gained 40 pounds (18 Kg) and all symptoms of active tuberculosis had disappeared. He is still doing well.

DR F. M. POTTENGER, Monrovia, Calif. There is a certain type of patient who does not make satisfactory improvement under the ordinary regimen. These patients are often poor eaters even when well and fail to gain on a regimen that fattens the average patient. This is the type which in my hands has gained most from the use of insulin. It has been my experience that patients with tuberculosis show a greater tendency to urticarial reaction to insulin than do the nontuberculous patients and those with diabetes. I should like to know whether this conforms with Dr. Allen's experience. Another interesting experience noted was that of a local degeneration of the muscles following the use of insulin. This did not occur at the point of injection but in distant areas. It was most marked in the gluteal muscles. Two patients were given from 15 to 30 units a day in three doses twenty minutes before each meal. Both patients gained in weight. One gained from 83 to 120 pounds (37.6 to 54.4 Kg), and the other from 110 to 122 pounds (50 to 55.3 Kg). The degeneration in the two patients was so marked that it showed as a distinct furrow in the gluteal muscles. I also noticed in these patients a slight degeneration of the leg and arm muscles. I had difficulty in finding an explanation of the phenomenon. I had been of the impression that tuberculous patients have a low sugar tolerance. I have noticed that those who are acutely ill do not seem to take the normal amount of sugars and starches if allowed to follow their own inclination. I attempted to increase their sugar intake but found that they had an aversion to it. After a little while, however, on forced sugar intake the degeneration disappeared. There is no doubt that insulin will aid in putting on weight and probably at the same time in building up the general resistance of the tuberculous patient who is naturally under weight or who fails to gain under the ordinary regimen. In certain instances it seemed that the insulin was not only of value in putting on weight but that it also improved the pulmonary condition. Whether this was true or not could not be readily proved. It is very difficult to assign the exact part which any measure plays in the treatment of a tuberculous patient for one does many things each of which may help in a limited way.

DR E. S. NICHOL, Miami, Fla. I suppose, since no follow up was given by Dr. Allen that most of these cases have been treated somewhat recently. It is unfortunate that more of a picture of the after-phase of these cases cannot be obtained. My experience with insulin in tuberculosis is small compared with Dr. Allen's group but in the general group of non-diabetic patients with constitutional leanness, malnutrition or asthenia it has been fairly extensive. I found that insulin was provocative of good appetite and had a typical reaction. Until two years ago there were some sixty or seventy papers published on the use of insulin in this type of case but no author reported a follow up to show how long the nutritional gain lasted. I attempted such a follow up two years ago and reported sixty-three cases at the meeting of the Southern Medical Association in New Orleans. Many of the patients were followed from one to five years. Approximately 20 per cent of these patients maintained the weight gained, most of them losing their gain during the first year. So far as tuberculosis is concerned I have yet to find a carefully controlled experiment in which insulin was given along with other sanatorium treatment and then followed up over a long period.

DR MOSES BARON, Minneapolis. I have used insulin treatment of undernourishment now for a number of years in a manner similar to that described by the author. I had the opportunity of seeing the first cases treated by Bauer and Falta in Vienna in 1926 and was impressed then with the good results obtained. I have recently reported a series of thirty cases treated with insulin. I have obtained good results in 75 per cent of the cases. Most of the patients have retained their weight though some of them did fall back. My series included instances of undernourishment in adults who were non-tuberculous. I am much impressed with Dr. Allen's excellent results. These cases demand a careful follow up in order to decide the final results. In my cases I give fairly large doses

I begin with 5 units three times a day about half an hour before meals and increase by 1 or 2 units three times a day until an average dosage of 25 units three times a day is reached. My largest dose has been 35 units three times a day. I have had no experience with dosage as large as 200 or more units a day. Offhand, these seem like very massive doses, and still they result in no insulin reaction. I have had no serious reactions in my cases. The present discussion is of great interest, since it shows that insulin is effective in undernourishment even in such specific infectious diseases as tuberculosis during the active stage of the disease.

DR WILLIAM S. COLLENS, Brooklyn. A well known physiologic fact is that the removal of the suprarenals will sensitize the animal to insulin. Cannon has definitely demonstrated that, following a unilateral suprarenalectomy in a cat and the removal of the medulla of the opposite suprarenal, the animal will become so sensitive to insulin that approximately one fortieth of the dose of insulin is necessary to produce the same effect as is produced in the same animal before the suprarenal operations. It becomes necessary, therefore to speak a word of caution in connection with the use of insulin in tuberculosis even though the clinical results are apparently very striking. In illustration of the point in question, a Negro, aged about 50 with a very active bilateral pulmonary tuberculosis running a febrile course was given insulin. As little as 5 units produced very violent hypoglycemic reactions, necessitating the cessation of insulin therapy after five doses. The patient died two weeks following this treatment and the post-mortem examination disclosed almost complete destruction of the suprarenals.

DR FREDERICK M. ALLEN, Morristown, N. J. Insulin was administered in the widest possible variety of cases in order to see its effects, not to recommend it as a routine measure. Gains of weight and appearances of clinical improvement were obtained in some cases of the type which according to most authors are not suited for insulin treatment. The fact remains that insulin is not expected to cure hopeless cases, and the greatest and most lasting results are found in the milder and less toxic types. Dr Callahan has reminded me that when the insulin prepared from hog pancreas causes urticaria, insulin especially prepared from beef or other species may not do so. Only two treatments have had to be stopped on account of urticaria. In violent attacks, injections of epinephrine hydrochloride may be useful for temporary relief. Evidently there is greater sensitiveness among the tuberculous than among other patients and urticaria is therefore a more important problem with them. The atrophy of tissues is a rarity and I do not know the reason for it. The observations of Leggett and Callahan are among the longest while those that I have reported extend over eighteen months. The longest continuous use of insulin in any individual of this group was eight months. Detailed publications will show that the weight gained with insulin is as a rule well retained except in cases which are too severe or toxic. Individualization of the dosage should be emphasized. The giving of 320 units a day was merely to demonstrate the harmlessness in a favorable case. The dosage usually begins with 5 units and increases to 30 or 40 units three times daily but experience is desirable for adjusting the insulin to the individual need instead of following any arbitrary rule. As I have tried to make clear from the outset, insulin is not a cure for tuberculosis but only an aid to the treatment. It is not suitable for all cases and will not save hopeless ones. In some quarters there seems to be a doctrine that patients with a certain progressive type of lesion or a certain lack of resistance will do regardless of treatment while others with a less dangerous form of infection or with adequate resistance will get well. In an extreme application this doctrine would mean discarding all treatment known up to the present. Neither abundant food nor climate nor bed rest nor pneumothorax can cure tuberculosis or are inherently hopeless cases. It is difficult to prove conclusively that vitamin diets affect the mortality. Nevertheless, all these measures are in practical use and are universally believed to be beneficial. The tuberculo specialists in our group believe that insulin deserves a place in this list for use in selected cases because of its effect in improving nutrition and possibly otherwise altering the soil on which the tuberculous infection develops.

Clinical Notes, Suggestions and New Instruments

ACUTE EDEMA OF THE LARYNX COMPLICATING MEASLES

KENNETH S. OLIVER, M.D. AND EDWARD L. TURNER, M.D.
BEIRUT, SYRIA

Acute edema of the glottis occurring during measles is mentioned as a rare complication by several authors. Barnhill¹ states that acute edema of the larynx sometimes follows or accompanies the worst types of exanthems. Coakley² lists measles as one of the causes of edema of the larynx. Morse³ states that severe inflammation of the larynx is an occasional complication of this disease in children. Scheppegrell⁴ states that 'acute laryngitis is sometimes simulated by the initial stage of an attack of measles. This may become so severe that a tracheotomy is required to relieve the danger of suffocation. As the edema of the larynx is usually relieved by the development of the rash, the operation should be deferred as long as possible and if necessary intubation given the preference.'

REPORT OF CASES

Last winter we saw three cases of acute edema of the larynx as a serious complication during an epidemic of measles in Beirut, Syria. Because of the fact that this complication is relatively rare and, when present usually appears before the eruption, we feel that the cases are worthy of presentation.

CASE 1—T. H., a boy, aged 7 years, admitted to the hospital, Jan. 22, 1933, complained of difficult respiration and cyanosis during the past two hours. About ten days before, the patient had a mild chill followed by cough, headache and photophobia. On the fourth day of his illness a typical measles rash appeared. He was seen for the first time by one of us (E. L. T.) after the rash had appeared. Treatment was outlined and the condition progressed satisfactorily for the next six days. January 22 while playing with his toys in bed he suddenly began to cough and have difficulty in breathing. The parents paid no attention to it at first but within thirty minutes the child had become cyanotic, was coughing violently and breathing with a very loud stridor. A physician was called (C. L. T.) and the diagnosis of acute edema of the larynx made. The child was wrapped in blankets and brought to the hospital about three blocks away where a tracheotomy was performed immediately. As soon as the tracheal tube was in position he began to breathe easily and his temperature, which was 38.5 C (101.3 F) on admission dropped to 37 C (98.6 F) within twenty-four hours. The remainder of his illness was uneventful. The tracheal tube was removed, January 27 and the child was discharged in good condition, January 28.

CASE 2—M. H. B., a boy aged 4 years, admitted to the hospital Feb. 16, 1933 complained of increasing difficulty in respiration during the past three days. The child had been ill for thirteen days previously. Three days after the onset a typical measles rash developed. The rash had begun to disappear, when the parents noticed that the child was having increasing difficulty with respiration. His voice became hoarse, the respiratory difficulty increased, a stridor was audible and the child was cyanotic. He was brought to the hospital by his family physician and a tracheotomy was performed because of the laryngeal edema. The temperature on admission was 41 C (105.8 F). Twenty-four hours after the tracheotomy the temperature had fallen to 38 C (100.4 F). The child's condition became complicated by a severe cervical adenitis and on February 27 the temperature reached 39.7 C (103.4 F). February 28 pus was aspirated from a fluctuating swelling on the left side of the neck. The abscess was incised March 1 and the pus evacuated. The pus contained gram-negative fusiform

From the Departments of Otolaryngology and Internal Medicine, American University of Beirut.

1. Barnhill, J. F. The Nose, Throat and Ear. New York: D. Appleton & Co. 1928.
2. Coakley, C. G. Manual of Diseases of the Nose and Throat. Philadelphia: Lea & Febiger, 1922.
3. Morse, J. L. Clinical Pediatrics. Philadelphia: W. B. Saunders Company, 1926.
4. Scheppegrell, William. In Abt's Pediatrics. Philadelphia: W. B. Saunders Company, 1925, volume 1.

bacilli, abundant small gram negative coccobacilli and diphtheroids. Following this incision the condition of the child rapidly improved. The tracheotomy tube was stopped completely, March 9, and the child was discharged in good condition, March 17.

CASE 3—E. T., a girl, aged 3 years, admitted to the hospital, Feb. 23, 1933, had been ill with a typical attack of measles several days prior to admission. She was brought to the hospital with marked respiratory stridor from acute edema of the larynx. The child was markedly cyanotic and the temperature was 41 C (105.8 F). The entire neck and chest were edematous and the measles rash was still visible. Immediate tracheotomy was performed but the child's general condition was so bad that she died eight hours later.

SUMMARY

Three cases of acute edema of the larynx complicating measles occurred during an epidemic of measles in Beirut during the winter of 1932-1933. Two of the patients recovered following tracheotomy, while the third one died. All three cases developed several days after the rash had appeared and not during the earlier prurash stage as is reported in most of the literature.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

Statement of the Council on Pharmacy and Chemistry on Hospital Formulary

INQUIRIES CONCERNING HOSPITAL FORMULARIES AND THE PROBLEM OF PRESCRIBING IN HOSPITALS ARE RECEIVED BY THE SECRETARY FROM TIME TO TIME. A SYMPOSIUM ON HOSPITAL PRESCRIBING WAS HELD IN 1930 (THE JOURNAL, APRIL 26, 1930, PP. 1277-1284). RECENTLY A COMMITTEE ISSUED A FORMULARY FOR THE NEW YORK HOSPITAL AND AN ARTICLE BY ROBERT A. HATCHER AND WENDELL J. STAINSBY WHICH DISCUSSES SOME OF THE MAJOR PROBLEMS OF THE HOSPITAL FORMULARY WAS PRESENTED AT THE RECENT MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. THE PLAN OUTLINED IN IT IS IN HARMONY WITH THE IDEALS OF THE COUNCIL WHICH HAS THEREFORE AUTHORIZED PRESENTATION OF THIS PAPER AS A DISCUSSION OF ONE PLAN FOR DETERMINING THE TYPE OF PREPARATIONS ESSENTIAL IN HOSPITAL PRACTICE. THE ENDORSEMENT OF THIS ARTICLE BY THE COUNCIL, HOWEVER, IS NOT TO BE CONSTRUED AS HOLDING THAT THIS IS AN OFFICIAL PLAN OR ONE THAT MAY NOT BE MODIFIED TO MEET OTHER SITUATIONS.

PAUL NICHOLAS LEECH, Secretary

THE HOSPITAL FORMULARY

By ROBERT A. HATCHER and WENDELL J. STAINSBY, New York

Large hospitals find it necessary to limit the prescriptions of the staff mainly to selected formulas, and this system has tended to promote the use of proprietary formulas, which usually cost much more than their official equivalents without corresponding advantage. The physicians of the staff do not often come in contact with the purchasing department or with the pharmacy of the hospital but they are frequently interviewed by the representatives of pharmaceutical manufacturers, who persuade them that their preparations have marked advantages over the pharmacopeial.

The formulary of the New York Hospital was prepared by a committee, which invited representatives of every department to present formulas desired for their departments. In every case where a complex formula or a proprietary preparation was desired the advocate of it was requested to present evidence of its superiority over the equivalent official preparation, and unless such evidence was submitted the committee declined to admit the article, or, in a few cases, admitted it with the proviso that it would be deleted unless evidence was presented that would justify its retention in a subsequent edition of the formulary.

The committee adopted the following rules governing the admission of articles to the formulary:

Rule I. Simple official (Pharmacopeial) substances will be admitted (when requested) unless they have become superfluous.

Rule II. No article will be admitted (except for controlled research) before its therapeutic value has been established.

Rule III. No article of secret composition will be admitted.

Rule IV. No article which is sold under a proprietary name will be admitted under such a name if a substance of identical composition can be obtained under a nonproprietary name.

Rule V. No mixture of two or more active substances will be admitted unless evidence is submitted that the mixture presents therapeutic advantages over the simple substances.

Rule VI. No proprietary article will be accepted before it has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies.

Rule VII. Requests for articles not included in the formulary of the hospital, but which are desired for use in controlled research which has been approved by the head of the department in which the investigation is to be conducted, will receive consideration by the committee.

Rule VIII. It is the policy of the committee to discourage the intravenous and intramuscular injection of substances which should be administered orally.

A careful examination of these rules will convince one that no article which is essential to the treatment of the sick is excluded from the formulary. For example, insulin was admitted without question, because there is no pharmacopeial substitute. On the other hand, mere popularity was not accepted as evidence of value.

In a few cases members of the staff were so firmly convinced of the superiority of a proprietary preparation that a blind test was proposed. In one such case, each of several departments was supplied with capsules containing the official barbitol, and the therapeutic equivalent of a proprietary barbitol derivative. These were labeled either A or B for the smaller dosage, and C or D for the larger with the statement that the capsules contained either barbitol or the derivative in question. This investigation has not yet been completed, but it is intended to analyze carefully the results of the reports of the several departments of the hospital, in order to determine whether the evidence supports the contention of the advocate of the proprietary article. If the evidence does show that it is superior to barbitol it will be admitted to the formulary. It is intended to pursue a similar policy in every case, so far as it is possible, so that no member of the staff can have any reason to feel that he is deprived of any drug which he considers essential, but he must furnish satisfactory evidence, in the form of reports of his own investigations or from the literature.

One member of the staff was so insistent on the superiority of a proprietary preparation of theobromine over the official preparations that one of us has conducted a pharmacologic study of the problem involving probably about 200 experiments. While the results of these experiments are not conclusive, they do not afford any evidence that the proprietary preparation has any advantage over the official Theobromine Sodium Salicylate. However, they do tend to throw light on the value of these preparations for the relief of cardiac pain in certain conditions.

As indicated in the rules, this does not interfere with the therapeutic study of any proprietary preparation, nor does it prevent the use by any department in the hospital of any substance concerning the superiority of which the staff is so firmly convinced that it is willing to conduct a scientific study of its uses, or to provide it at departmental expense. Since the publications of the formulary, the committee has continued to pass on the acceptability of various formulas and articles requested by the staff.

The committee could not have carried out its plans without the whole-hearted cooperation of the staff, and, with very few exceptions, the rulings of the committee have been accepted without protest after the whole subject had been discussed in considerable detail.

The use of the formulary has resulted in marked economy, but it is too early to determine the precise amount saved to the hospital. However, we are mainly interested in a system of rational therapeutics, and we believe that the use of official preparations is far more conducive to rational therapeutics than is the use of secret or semisecret preparations, or of a great variety of preparations having nearly similar effects and differing only in dosage.

This plan requires for its fullest success a highly skilled pharmaceutical staff capable of cooperating with the medical staff of the hospital in the conduct of therapeutic research. The training of men to fill the pharmaceutical positions in such progressive hospitals constitutes at once an opportunity, and a challenge to the schools of pharmacy, for there are few such pharmacists now available.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary

VETAB

Manufacturer—Vitab Products Company, San Francisco

Description—Ground wheat germ and rice polishings

Manufacture—The ingredients are admixed in definite proportions and treated by heat in a rotating drum for destruction of insect infestation. The processed material is bolted on a silk screen separator, that which passes through is packed in cartons as Vetab. The maximum temperature to which the product is raised is 70 C.

Analysis (submitted by manufacturer) —

	per cent		
Moisture	9.9		
Ash	7.5		
Fat (ether extraction method)	13.2		
Protein (N X 6.25)	12.1		
Reducing sugars as maltose	4.5		
Starch (acid hydrolysis method)	38.3		
Crude fiber	0.7		
Carbohydrates other than crude fiber (by difference)	56.6		
Calcium oxide (CaO)	0.36	Ca	0.26
Chlorine		Cl	0.01
Iron oxide (Fe O ₂)	0.019	Fe	0.013
Magnesium oxide (MgO)	1.28	Mg	0.77
Phosphoric anhydride (P O ₂)	3.86	P	0.84
Potassium oxide (K O)	1.67	K	1.39
Sodium oxide (Na O)	0.09	Na	0.06
Sulphur		S	0.21

Calories—3.9 per gram 97 per ounce.

Vitamins—Vitamin B assay: rat tests with Chase and Sherman method, 73 units per gram, 210 per ounce. (Wheat germ and whole wheat approximate respectively 283 and 43 units per ounce.)

Claims of Manufacturer—A rich source of vitamin B. Rich in the mineral elements calcium, magnesium, phosphorus, potassium and iron.

HORMEL FLAVOR SEALED VEGETABLE SOUP

Manufacturer—George A. Hormel & Co., Austin, Minn.

Description—Vegetable soup containing beef broth, tomatoes, potatoes, carrots, celery, navy beans, corn, rice, barley, string beans, lentils, peas, pimientos, okra, kidney beans, salt, and onion extract.

Manufacture—Dried navy beans, lentils, rice, barley and kidney beans are carefully inspected; foreign substances and imperfect grains are removed by special devices and by hand. The navy beans are ground before using; the other dry ingredients are used whole.

Fresh potatoes, carrots, celery and onions are cleaned by mechanical agitation in free running water and hand trimmed and cleaned with knives and water. They are inspected at least five times and are not exposed to the air for more than one hour after work of preparation has begun. Onions are peeled, chopped and placed in cheese-cloth bags to be cooked in

the broth. Carrots are mechanically peeled, freed from black spots and green tops by hand, mechanically diced, and again hand inspected. Potatoes are peeled by an electrical rotary water spraying machine, the eyes are removed, and the potatoes are diced and placed in cold water until used. Celery is devoided of root and leafy attachments, which are disposed of immediately. The stalks are dismembered, inspected, sorted, and placed in a rotary agitator, where they are freely sprayed with water, the water is drained off simultaneously with the spraying so as to assure removal of any insect spray residue. The celery is again cleaned by hand by skilled operators and inspected.

Purchased canned tomatoes, okra, string beans, peas, corn and pimientos are used. The tomatoes are heated in a steam jacketed kettle to over 77 C before using; discolored pieces are removed from the green okra, the string beans and peas are drained. If possible, vacuum packed corn is used; if not, drained regular canned corn is used. The juice of the pimientos is drained off; seeds and black specks of roasted skins are removed, and the pimientos are diced.

The beef broth is prepared from trimmings from U. S. Department of Agriculture inspected and passed beef. The fat is removed and ground separately. The ground meat in cheese-cloth bags and definite quantities of onions and ground fat are cooked in water containing tomato puree and salt. The bags are removed, the fat is skimmed off and the broth is strained through cheese-cloth.

Cans, on conveyor belts, are filled automatically with definite quantities of the respective vegetables; the beef broth is automatically added to fill the cans, which are sealed, cooked in retorts for ninety minutes at 100 C and twenty minutes at 115 C, and chilled.

Analysis (submitted by manufacturer) —

	per cent
Moisture	92
Ash	1.2
Fat (ether extract)	1.4
Protein (N X 6.25)	1.3
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	3.8

Calories—0.3 per gram 9 per ounce.

Claims of Manufacturer—Nearly a pint of beef soup stock and fifteen vegetables in every can. Cooked in the can.

MCCORMICK'S BEE BRAND IMPORTED PAPRIKA

Manufacturer—McCormick and Company, Inc., Baltimore

Description—Ground dried paprika (pimenton, pimiento) (ripe fruit of *Capsicum annum* L.)

Manufacture—Spanish paprika is dried in the sun and ground after removal of the stems, seeds and placentas, producing a mild paprika. The powder is exported and packed in tins at the packing plant.

Analysis (submitted by manufacturer) —

	per cent
Moisture	4.7
Total ash	7.1
Acid insoluble ash	0.5
Volatile ether extract	0.9
Nonvolatile ether extract	10.6
Protein (N X 6.25)	15.4
Crude fiber	17.4
Carbohydrates other than crude fiber (by difference)	43.9
Iodine number of extracted oil	133

Claims of Manufacturer—Conforms to the United States Department of Agriculture standard.

SENTRY WHOLE WHEAT FLOUR

Manufacturer—Breese Grain Company, Breese, Ill.

Description—Whole wheat flour milled from red winter wheat.

Manufacture—Whole wheat is cleaned, scoured and reduced to a flour.

Analysis (submitted by manufacturer) —

	per cent
Moisture	12.6
Ash	1.6
Fat (ether extraction method)	1.6
Protein (N X 5.7)	10.5
Crude fiber	2.0
Carbohydrates other than crude fiber (by difference)	71.7

Calories—4 per gram 97 per ounce.

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SATURDAY, DECEMBER 2, 1933

ECONOMIC TRENDS AND THE WEIGHT OF CHILDREN

The continuance of the economic depression has given rise to many predictions as to its dire consequences to human health. Without doubt a prolonged period of unemployment and hardships incident to failing incomes is likely to affect seriously the standard of living in any country in which such situations arise. Economic collapse may naturally be expected to affect the food distribution of the population almost as readily as the failure of crops or the blockades of warring nations. The menace usually seems most threatening to the child population, for this represents groups of persons who, on the one hand, are least able to make adjustments on the spur of the occasion and, on the other, have peculiar needs represented by the demands of growth.

Malnutrition among children, always an interesting problem, has been emphasized recently through the publicity associated with the Child Health Recovery Conference called at Washington early in October by the Secretary of Labor. This conference was said to be called for the purpose of considering an emergency in child health due to the depression. Specifically, it was alleged that from six to seven million children in the United States are suffering from malnutrition due more or less directly to the economic crisis through which the country has been struggling for the past four years. The meeting disclosed certain fundamental differences of opinion. During the discussion of the recommendations of the executive committee of the conference, which called for an extensive program of physical examinations on a nationwide scale for the discovery of malnutrition, it became evident that many of those in attendance, including physicians with long experience in public health work, were by no means convinced that any increase in malnutrition had been demonstrated.¹ The statistics presented in support of the claim that millions of children are underweight as a result of the depression were challenged. The opinion

was advanced that a preventive program consisting merely of providing funds for supplying bread and milk in adequate amounts was all that would be necessary to guard against the possible development of undernourishment among children.¹

In the light of this conflict of opinions, special interest attaches to the study by Palmer² of growth in children in relation to the economic depression. This study was carried out in Hagerstown, Md, chosen because approximately twenty million of our people live in communities of similar character. In the composition of its population, employment, charitable agencies and other community characteristics, including financial, it is reasonably representative of others of like size. Palmer³ had already made studies of variability of weight among elementary school children in Hagerstown from 1921 to 1927. These studies were available to serve as a control for the current observations. Palmer concluded that the average weight of children in the two periods presents no consistent or statistically significant differences and that the variability of body weight, measured by the standard deviation, is not consistently different for the two periods as far as boys are concerned, but that the weight for girls is slightly more variable in 1933 than from 1921 to 1927. He found four fewer boys and forty-one more girls who were 12 per cent or more underweight in 1933 than would have been expected if the same proportions had been found underweight as in the earlier study. A further classification disclosed that among families of the unemployed, those of the partially employed and those of the regularly employed, the same differences existed as are commonly found between children of different socio-economic classes. Palmer concluded that there has been no obliteration or widening of the class differences during the period of the depression. A still further classification into groups receiving aid from charity and those not receiving aid shows that children in the former class are from 2½ to 9 pounds lighter than in the latter, and Palmer infers that children who are most in need of supplementary aid are probably receiving it.

It is acknowledged that weight alone is not a satisfactory criterion of nutrition, except in a general way, but may be used to a limited extent as a convenient general index. Comparative studies such as those of Palmer are more significant than the statistics derived from the routine weighing of thousands of children, often without supervision, by nurses and teachers. The situation in Hagerstown, as described by Palmer, is probably fairly representative. It does not justify hysteria about the increase of malnutrition as a result of the depression. That thousands of children are underweight may be conceded, unfortunately, that has always been so. That well considered measures ought

² Palmer C E. Growth and the Economic Depression. Pub Health Rep 48 1277 (Oct 20) 1933.

³ Palmer C E. Variations of Growth in Weight of Elementary School Children 1921 1928. Pub Health Rep 48 993 (Aug 18) 1933.

¹ Proceedings of Child Health Recovery Conference Washington D C Oct 6 1933. Children's Bureau U S Department of Labor.

to be taken for the correction of such a condition may also be conceded, as may the possibility pointed out by THE JOURNAL⁴ that the results of the economic catastrophes of the past four years may not be manifest at once. At the same time, care should be taken that measures advocated are sound and may reasonably be expected to accomplish the end sought.

The program advanced by the executive committee of the Child Health Recovery Conference leaves much to be desired, especially with respect to the proposal to examine, in what must be a hurried and superficial manner, millions of children. Fortunately the program was adopted as a recommendation only, and the state medical societies are to have a voice in its further development in the respective states. Emphasis on adequate food relief seems most sensible and immediately effective, utilizing the knowledge of health and nutritional conditions in the various communities, already possessed by physicians, by public health and relief officials and by social service organizations.

THE INTERNAL TEMPERATURE OF THE BODY

In the classic volume "Experiments and Observations on the Gastric Juice and the Physiology of Digestion," published by William Beaumont, America's pioneer physiologist, just a century ago, he records a series of observations made under various conditions on the temperature of the interior of the stomach of Alexis St. Martin. The records were secured by insertion of either a "mercurial" or a "spirit" thermometer through the gastric fistula. In the chapter of inferences that form the conclusion of Beaumont's book he stated "that the natural temperature of the stomach is 100 Fahrenheit, that the temperature is not elevated by the ingestion of food, that exercise elevates the temperature, and that sleep or rest, in a recumbent position, depresses it." Incidentally he pointed out that, when the distance of the inserted bulb from the pylorus varied, some variation in temperature could be observed amounting to three fourths of a degree, between the splenic and pyloric extremities." The accuracy of these records, like much of what Beaumont reported, receives a surprising confirmation in the data secured with thermometric apparatus of special construction a hundred years later. Hepburn, Eberhard Ricketts and Rieger¹ of Philadelphia have found that in 129 men the maximum gastric temperature was 101.8, the minimum 97.8 and the average 99.2. In 128 women the maximum was 102.2, the minimum 97.5 and the average 99.4. With each sex the gastric temperature was between 99 and 99.9 in approximately six tenths of the subjects, and between 98 and 100.9 in more than nine tenths of the persons examined.

The internal temperature of the body and its variations are not without considerable interest. Accurate determinations, in all but exceptional instances such as gastro-intestinal fistulas afford, have been few until modern times. In the Philadelphia observations, in a group of fifty-three persons the temperature of the upper part of the intestine lay between 98 and 100.1 F (average 99), and was within one degree of the gastric temperature. In a group of six persons the sigmoidal temperature lay between 100.8 and 101.5 F (average 101.2) and was higher than the oral temperature by two degrees or more.

Application of heat over the gastric and particularly the abdominal areas is often used to give relief when localized distress occurs there. It may be surprising to learn, therefore, that when physical therapeutic agents, such as the electric pad, hot water bag, infra-red lamp, diathermy, hot wet pack or ice bag, were applied locally none of the observed changes in visceral temperature exceeded the maximum variation in gastric temperature during similar periods of time in a control series. Hence the conclusion that the production of any reparative benefit by local application of heat or cold is conjectural. On the other hand, ingestion of either ice water (250 cc) or ice cream (90 Gm) produced a marked decrease in gastric temperature, followed by a rise, at first quite rapid, then progressively slower. The average recovery time was in excess of half an hour. Use of ice water in a test meal delayed the gastric emptying time by from fifteen to thirty minutes. Ingestion of hot drinks produced a marked increase in gastric temperature, followed by a decrease, at first rapid, then progressively slower. Hepburn and his co-workers obtained evidence that leakage of a cold beverage through the pylorus lowers the temperature of the upper part of the intestine by several degrees. This observation, they conclude, may throw light on the etiology of gastro-enteric disturbances in patients who have a rapid gastric emptying time and partake copiously of cold beverages.

Current Comment

THE ADMINISTRATION OF THYROXINE

There can no longer be doubt that thyroxine represents the effective iodine-containing hormone of the thyroid gland. As it has been prepared synthetically and the synthesized product has been subjected to conclusive therapeutic tests, all debate about contaminating potent principles and other doubts as to the specificity of thyroxine itself can now be dispelled. A few milligrams of the substance introduced into the blood stream is sufficient to bring about a noteworthy augmentation of metabolism which may continue for some time. These facts, of course, do not mean that thyroxine as such is identical with the product actually secreted by the thyroid, but it does represent the functionally potent molecular group of the thyroid hormone. In

⁴ Deception, Death Rates, editorial, J. A. M. A. 99, 1334 (Oct. 15), 1932.

¹ Hepburn, I. S., Eberhard, H. M., Ricketts, Rowland and Rieger, C. I. W. Temperature of the Gastro-Intestinal Tract: The Effect of Hot and Cold Foods and of Physical Therapeutic Agents. Arch. Int. Med. 52, 131 (Oct.) 1932.

this respect it is in striking contrast to diiodotyrosine, an inert iodine-bearing amino acid that also has been isolated from the thyroid gland. One of the puzzling features of thyroxine from almost the outset of its discovery and isolation has been the repeated observation of the inefficacy or greatly lowered effectiveness of thyroxine when it is administered by mouth rather than intravenously. At first thought one would expect the purified hormone to be quite as potent as an equivalent amount of desiccated thyroid gland. Frankly there is a marked discrepancy in this respect. Observations at Rush Medical College in Chicago¹ afford at least a partial explanation in the relative insolubility of the pure hormone. Pure synthetic thyroxine had much less effect by mouth than its monosodium salt. According to Harrington and Salter,² the physical properties of thyroxine are such as to make it highly probable that the absorption of this substance after oral administration would be inefficient and erratic, the digestion product, on the other hand, possessing as it does a much wider range of solubility, might well be absorbed almost quantitatively. The Chicago clinicians point out that, in the digestion of desiccated thyroid, peptides and polypeptides of thyroxine are formed which have a wide range of solubility. They conclude that solubility of the thyroxine compound administered would therefore appear to be important and destruction by intestinal enzymes must be considered, but only future work will determine whether or not some other factor, as yet unknown, is also to be considered.

AMEBIC DYSENTERY

The attention of readers is called to a number of letters on amebic dysentery appearing in the correspondence columns of this issue of THE JOURNAL. There is widespread interest throughout the United States in the attempts to control the further spread of this disorder. Moreover, experience is bringing to light exceedingly important information relative to the proper treatment of the disease. Evidence is now available that cases are continuing to appear not only from the original focus of the disease but from secondary foci throughout the United States. As is pointed out by the investigators from the Johns Hopkins Hospital, the disease tends promptly to become a familial disorder once a single case appears in any family. Moreover, the long incubation period (from nine to ninety-five days) means that cases may continue to appear in the future not having been detected in earlier examinations. Thus, one case is reported in an individual who visited the hotel that was the original focus of the disease during the first week in October, after all sanitary precautions had been established, and the health department of the city of Chicago now reports that 10 per cent of the food handlers examined during November were found infested even after examinations of these food handlers had been negative in three previous studies. Experts in the investigation of amebic dysen-

tery writing from California reiterate the warnings that have been emanating from California and from the southern parts of the United States for the past ten years that sooner or later the spread of this disease will become a national problem.

FATTY INFILTRATION OF THE MYOCARDIUM

Sudden death associated with failure of the heart occurs now and then under conditions in which the easily identified causes seem to be lacking. When the characteristic anatomic changes responsible for interruption of cardiac function cannot be demonstrated, death may be ascribed to conjectured spasm of the coronary arteries, ventricular fibrillation, shock, or other functional disturbance. It has been recently stated¹ that, while undoubtedly fatal conditions are encountered for which a satisfactory explanation cannot be obtained by the use of present morphologic methods, it must be emphasized that such assumptions should be made only after careful study has ruled out the possibility of a morphologic explanation. An attempt to discover heretofore unrecognized or unaccepted fatal morphologic changes in the heart has been made, apparently with some success, by Saphir and Corrigan¹ at the Michael Reese Hospital in Chicago. They point out that fatty infiltration of the myocardium was a more conspicuous clinical and pathologic diagnosis a few decades ago than it is today. Modern clinicians mention this condition among cardiac disturbances but are cautious in their interpretation of its significance. Perhaps, they add, the fact that the clinical manifestations are so indefinite has relegated this disease entity to an obscure place in considerations of cardiopathy. According to the Chicago pathologists, however, there are occasional instances in which, in the complete absence of all other major lesions, fatty infiltration is the presumptive sole cause of death. The myocardium of the right ventricle is the region mainly affected. The infiltration leads to a replacement of the muscle fibers by fatty tissue. The muscle fibers primarily become atrophic and later apparently disappear. If the replacement by fat involves a large portion of the myocardium it may lead to sudden death, without any premonitory symptoms of heart failure. Saphir and Corrigan assume that, when such infiltration is present, factors which cause an increased demand on the heart and which under normal conditions could easily be compensated for may lead to sudden death. Fatty infiltration of the myocardium may be regarded as a morphologically demonstrable cause of heart failure and death in instances in which death clinically was thought to have been the result of functional disorders without a morphologic basis. Apparently, a myocardium that is the seat of fatty infiltration may carry on its function as well as a normal heart but has no reserve power. Perhaps, as Saphir and Corrigan further conclude, the use of modern methods of recording auscultatory phenomena may reveal some typical changes, likewise, if numerous electrocardiograms are

¹ Thompson W. O., Thompson P. R. and Dickie, L. T. N. Mono-sodium Thyroxine, Desiccated Thyroid and an Impure Sodium Salt of Thyroxine. *Arch. Int. Med.* 52: 576 (Oct.) 1933.

² Harrington C. R. and Salter W. T. The Isolation of 1 Thyroxine from the Thyroid Gland by the Action of Proteolytic Enzymes. *Biochem. J.* 24: 456 1930.

¹ Saphir Otto and Corrigan Marion C. Fatty Infiltration of the Myocardium. *Arch. Int. Med.* 52: 410 (Sept.) 1933.

recorded it may be possible to link to fatty infiltration a low voltage or other unexplained electrocardiographic observations in patients giving no evidence of coronary sclerosis and myocardial fibrosis. They believe that a study employing all the modern diagnostic methods may reveal a definite symptom complex and establish a clinical picture that has as its pathologic basis fatty infiltration of the myocardium.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION AND MEDICAL LICENSURE

Tentative Program

The Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held in the Palmer House, Chicago, Feb. 12 and 13, 1934. The Federation of State Medical Boards of the United States and the American Conference on Hospital Service will participate in the congress. The preliminary program follows:

MONDAY, FEBRUARY 12, 10 A. M.

Review of the Accomplishments of the Council on Medical Education and Hospitals
Ray Lyman Wilbur, M.D., Chairman, Stanford University, Calif.
Philosophy of Professional Licensure
Justin Miller, J.D., Dean, Duke University School of Law, Durham, N.C.
Medical Education and Its Relationship to Society as a Whole
Robert G. Sproul, LL.D., President, University of California, Berkeley.
The Restoration of the General Practitioner
Dean Lewis, M.D., President, American Medical Association, Baltimore.

MONDAY, FEBRUARY 12, 2 P. M.

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE AMERICAN CONFERENCE ON HOSPITAL SERVICE
Responsibility of the Hospital Trustee and the Relationship Between the Trustees and the Staff
Howard S. Cullman, A.B., President, Beekman Street Hospital, New York.
Symposium: Size and Scope of a University Clinic
Henry Houghton, M.D., Director, University of Chicago Clinics.
Nathaniel B. Van Etten, M.D., Vice Speaker, House of Delegates, American Medical Association, New York.
John H. J. Upham, M.D., Dean, Ohio State University College of Medicine, Columbus.

TUESDAY, FEBRUARY 13, 9 A. M.

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES
The Principle of Reciprocity in Professional Licensure
Bernard C. Gavit, J.D., Professor, Indiana University School of Law, Bloomington.
A Study of the Administration of Medical Practice Acts
J. N. Baker, M.D., Secretary, Alabama Board of Medical Examiners, Montgomery.
Reciprocity Agreements
John R. Neal, M.D., Secretary, Professional Committee for Medicine, Illinois Department of Registration and Education, Springfield.
Medical Licensure in South America
William D. Cutter, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago.

TUESDAY, FEBRUARY 13, 2 P. M.

The Incorporation of the Principles of Preventive Medicine in Clinical Teaching
Wilson C. Smillie, M.D., Professor of Public Health Administration, Harvard University, Boston.
The Teaching of Industrial Hygiene
Leverett D. Rivest, M.D., Health Director, American Telephone and Telegraph Company, New York.
The Function of the Physician in Public Health Education
W. W. Bauer, M.D., Director, Bureau of Health and Public Instruction, American Medical Association, Chicago.

TUESDAY, FEBRUARY 13, 2 P. M.

THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES
Tracking of Narcotics by Licensed Physicians
H. J. Anlinger, United States Commissioner of Narcotics, Washington, D.C.
The Use of the Insurance Procedure in Enforcing Medical Practice Acts
F. M. Brit, J.D., Attorney, Minnesota Board of Medical Examiners, St. Paul.

Business Session

The Annual Dinner of the Federation of State Medical Boards of the United States will be held at the Palmer House, Chicago, on Monday, February 12.

MEDICAL BROADCAST FOR THE WEEK

Talks over Network of the National Broadcasting Company

The American Medical Association broadcasts each Monday morning from 1:30 to 1:45, Eastern standard time (12:30, central standard time). The subject for Monday, December 4, is "Diet and Health." The speaker will be Dr. Morris Fishbein, editor of *THE JOURNAL*. Subjects and speakers for subsequent broadcasts will be announced weekly in *THE JOURNAL*.

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

December 5: The Food Law and Advertising
December 7: Fresh Air in the Home

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

December 9: Communicable Diseases Among Children

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSANS

Clinical Meeting—The Fort Smith Clinical Society conducted its ninth meeting in Fort Smith November 7. Clinics were directed by Drs. Ira F. Jones and James H. Buckley, a symposium on goiter was presented by Drs. James W. Amis, Arthur I. Hoge and Frederick H. Krock, and a clinical pathologic symposium on cancer of the uterus, with Dr. Edward H. Skinner, Kansas City, Mo., speaking on "Radium and Radium Therapy." Other speakers included Drs. Herbert Moulton on "Visual Fields in Brain Lesion," Davis W. Goldstein, "Control of Leprosy in the United States," James A. Foltz, "Management of Fractures of the Long Bones," Miles E. Foster, "Essential Points in Skin Grafting," and Charles S. Holt, "The Acute Abdomen." Drs. Harold P. Kuhn and Ferdinand C. Helwig, Kansas City, Mo., exhibited specimens.

CALIFORNIA

University Drops School of Optometry—The School of Optometry of the University of Southern California, Los Angeles, went out of existence when the fall semester opened, according to the *Optical Journal and Review of Optometry*. There were several reasons for the university's dropping the school, the principal one, according to the report, was the lack of cooperation by the optometrists of southern California.

Symposium on Heart Disease—Conferences, clinics, discussions and demonstrations constituted the fourth annual graduate symposium on heart disease in San Francisco, November 22-23, under the auspices of the heart committee of the San Francisco County Medical Society, the San Francisco Tuberculosis Association and the health council of the San Francisco Community Chest. The program also included a symposium on arterial hypertension.

Pretzell Pleads Guilty—Paul Pretzell pleaded guilty in Los Angeles, August 2, to a charge of violation of the medical practice act and was sentenced to 180 days in the city jail. Pretzell claimed to be a doctor of medicine with a New York license, *California and Western Medicine* reported. He was committed to jail in 1930 in Santa Ana County for a similar offense and served a term in the county jail at San Diego for vagrancy; it is reported. Claiming to be a registered pharmacist in New York, Pretzell also claimed that he attended medical school in Heidelberg, Germany, and at Columbia University, New York. He admits, however, that he never graduated and that he had never been licensed to practice medicine anywhere.

Imported Rags—An order was issued by Dr Jacob C Geiger, director of public health of San Francisco October 19, which calls for the more stringent enforcement of a local law, adopted in 1911, affecting the "wiping rag" industry. Accusations have been made and investigations have proved that some practices now employed are not in keeping with the local laws, which regulate the cleansing, sterilizing and sale and use of materials used for cleaning. To comply with the ordinance, this material must be boiled for forty minutes in a solution containing at least 5 per cent of caustic soda. Before being sold, each package of wiping rags must be plainly marked "sterilized wiping rags," with the number and date of the certificate given by the health officer of the city and county for the operation of the laundry where the material was cleansed and sterilized. Importers of wiping rags particularly of Asiatic source shall make advance written notification to the director of public health of each shipment of rags for the San Francisco market. All material shall be subject to inspection and examination by the health department and, on indication, shall be held in quarantine until the proper laboratory examination is completed.

COLORADO

Five Year Cancer Program—Cancer of the breast will be the theme of the five year program on cancer education soon to be inaugurated by the recently appointed committee on cancer education of the state medical society, according to *Colorado Medicine*. Four teams have been named to present symposiums on the diagnosis and treatment of cancer with emphasis on early diagnosis. Drs William W Haggart and Harry S Finney, Denver, and John B Hurtwell and George W Bancroft, Colorado Springs (surgeons). Drs Kenneth D A Allen, William W Wasson and Frederick E Diemer, all of Denver, and George A Unfug, Pueblo (radiologists), Drs Carl W Maynard and Josephine N Dunlop, Pueblo, and Wilfred S Dennis, William C Black, Jr, and Emeric I Dobos, all of Denver (pathologists).

CONNECTICUT

Two Cases of Psittacosis—Two cases of psittacosis have recently been reported in Connecticut, both of which were traced to parakeets shipped from California, according to the state department of health. October 29, one of two parakeets recently acquired by a family died after being "droopy" two or three days. The following day one member of the family became ill, and subsequent laboratory tests confirmed the diagnosis of psittacosis. Previously, a parakeet had died in Connecticut after it had been shipped from California to a retail store in New York and from there to Connecticut. At that time parakeets had been shipped to eight purchasers in Connecticut from the New York store. An investigation revealed that three had died, and, on recommendation of the health authorities, the others were destroyed.

DISTRICT OF COLUMBIA

Centenary Commemorating Unanue—The one hundredth anniversary of the death of Dr Hipolito Unanue (1755-1833), whose bust appears in the Hall of American Heroes in the Pan American Union, was commemorated at a meeting of the Washington Chapter of the Pan-American Medical Association, November 10. Speakers included Dr Manuel de Freyre y Santander, Peruvian ambassador, Dr Jose G Lewis, acting president of the chapter, Dr Prentiss Willson, president of the Medical Society of the District of Columbia, Dr George B Trible, president of the International Medical Club, Dr Tomas M Caynas, president of the Clinical Club of Washington and Dr Aristides A Moll, secretary of the chapter. Unanue is credited with placing the teaching of medicine on a solid basis in Peru through the organization of an anatomic amphitheater in 1791 and of the San Fernando Medical College in 1812.

FLORIDA

Society News—The DeSoto-Hardee-Highlands County Medical Society was recently addressed in Sebring by Dr Walter A Weed, Lakeland, on diagnosis of lesions of the gastro-intestinal tract. At a meeting of the Duval County Medical Society in Jacksonville, October 3, the speakers were Drs George F Oetjen on first aid treatment, Harold D Van Schaick, head injuries, and Frederick J Waas, injuries to the abdomen.

Child Health Program—Recommendations of the Duval County Medical Society for the inauguration by the Jacksonville Health Department of a comprehensive child health pro-

gram were adopted, October 25, by the city commission, news papers report. According to the plan, the supervision of the health of children will begin at birth rather than just before entrance into school. Other features include the distribution by the health department, with each birth certificate issued, of schedules of minimum health requirements for infants and children, and the furnishing of blank health records for each child about to enter school, to be filled out by private physicians and returned to the department.

GEORGIA

Encephalitis Reportable—The board of health of Macon and Bibb County recently amended its regulation governing communicable disease to include encephalitis as a reportable disease. In the future, patients must be isolated and quarantined, while placards will be required on homes where the disease is present.

ILLINOIS

Program for Health Officers—The Illinois State Department of Health is holding a special program for health officers December 14-15, in Springfield. Drs Paul J Zentay and John W Eschenbrenner, Jr, St Louis will discuss epidemic encephalitis. Drs Arlington Ailes, LaSalle, Lloyd L Arnold, Julius H Hess and Lydia J Roberts, Ph D, Chicago, diet and nutrition and Drs Jay Arthur Myers, Minneapolis, Robinson Bosworth, Rockford, Thurman B Rice, Indianapolis, and Gottfried Koehler, Springfield, school health problems. Dr James P Leake of the U S Public Health Service has been invited to participate in the symposium on epidemic encephalitis. The speakers at the banquet session December 14, will be Drs William A Evans and Allan J Hruby, Chicago, and Eben J Carey, Milwaukee. Participating in a round table discussion will be Drs Howard A Orvis, Winnetka, Wilmer M Talber, Decatur, John W H Pollard, Evanston, Elmer B Cooley, Danville and Harry O Collins, Quincy, all health officers.

Chicago

Dean Lillie Appointed Distinguished Service Professor—Frank R Lillie, Ph D, dean since 1931 of the Division of Biological Sciences University of Chicago, has been appointed Andrew MacLeish Distinguished Service Professor in "recognition of his brilliant and fruitful service to the university." There are six endowed professorships for distinguished service in the university. Dr Lillie, a graduate of the University of Chicago received the degree of doctor of philosophy from his alma mater in 1894. He has been professor of zoology at the school since 1907 and chairman of the department since 1911. He has been associated with the Marine Biological Laboratory, Woods Hole, Mass since 1893 becoming president in 1925. He was managing editor of the *Biological Bulletin* from 1902 to 1926. Societies of which he has been president include the American Society of Zoologists, 1905-1908, and the American Society of Naturalists, 1915.

IOWA

Public Health Meeting—The Iowa Public Health Association conducted its eighth annual meeting, November 22, at Des Moines. The program included a round table discussion on "What Lay Organizations Can Contribute to a Statewide Health Program," under the direction of Dr Walter L Biering, President-Elect, American Medical Association and commissioner of public health of Iowa. Dr James P Leake, U S Public Health Service Washington D C, addressed a joint session of the association and the Physicians' Circuit Postgraduate Lecture Course on "The Recent Outbreak of Epidemic Encephalitis in St Louis." Other speakers included Drs Albert J Chesley, St Paul, Clarence H Kinnaman, Topeka, Kan, and Milford E Barnes, Iowa City.

LOUISIANA

Bureau of Credit Established—The Orleans Parish Medical Society has established a bureau of credit in New Orleans. Should a patient's name be placed on the delinquent roll, which is being compiled, and satisfactory arrangement for settlement of the account is not made within 125 days legal action will be taken in an effort to collect the fee, it was stated. Members of the society will be required to report monthly to the new department the names and addresses of all patients owing amounts for ninety days or more, if no arrangement has been made for the settlement. This information will be disseminated to all the physicians through monthly delinquent lists. The new plan will not interfere with the continuance of the charity work of the society.

MARYLAND

Dinner to Dr. Hawkins—The Allegany-Garrett County Medical Society feted Dr. Arthur H. Hawkins, Cumberland, with a dinner at its semiannual meeting, recently. Dr. Hawkins, who was president of the society in 1918, was presented with a silver service.

Home Care for Mental Patients—Emergency Measure—In an effort to limit admissions to state hospitals so that existing resources may be used to the fullest extent in the care of urgent and favorable cases, the state board of mental hygiene has asked physicians to urge private hospital care for those patients who can afford it, and home care for those patients to whom the public hospitals can offer only custodial care. The board requests that physicians commit only patients for whom the hospitals offer a chance of successful treatment, or those whose presence at home constitutes a menace. The board points out that, unless this plan is undertaken as an emergency measure over crowding and decreasing budgets will reduce hospital service to an almshouse level.

The "Healthmobile"—Seven counties in southern Maryland and on the eastern shore were visited by the "healthmobile" of the bureau of child hygiene of the state department of health on its tour this summer. During the eleven weeks of the tour eighty-five communities were visited and eighty-nine health conferences were held for the examination of infants and children under school age. Of 1,589 children examined 1,137 needed follow-up care of some sort, about 216 were underweight and 142 had unhealthy tonsils. Of the total number, 1,341 children were given dental examinations and 767 were treated by the dentist. Of the 614 children between the ages of 5 and 7 examined in preparation for their admission to school, 334 had not been vaccinated against smallpox. The parents were notified that the children would have to be vaccinated before they could be received at any public school in the state.

MICHIGAN

Auxiliary Entertains Society—The woman's auxiliary entertained the Wayne County Medical Society with a dinner November 14. The guest speaker was Prof. John Lewis Brumm, director department of journalism University of Michigan, on "The Menace of Efficiency."

Course in Electrocardiographic Diagnosis—The department of postgraduate medicine University of Michigan School of Medicine Ann Arbor gave a five and one-half day course in electrocardiographic diagnosis at the University Hospital November 6-11, under the direction of Dr. Frank N. Wilson, professor of internal medicine.

State Board Election—Dr. Theron G. Yeomans, St. Joseph, was elected president of the Michigan State Board of Medical Examiners October 13. Dr. Jacob D. Brook, Grandville, vice president, and Dr. J. Earl McIntire, Lansing, reelected secretary and executive officer. Dr. John J. Walsh, Isernburg, was reappointed to membership on the board for four years.

Tuberculosis Survey—With a view to disclosing possible sources of infection a survey is being carried on in Kent County to determine the incidence of tuberculosis. Dr. Joseph D. Aronson is a representative of the Henry Phipps Institute of the University of Pennsylvania and of the Rockefeller Foundation is in charge of the work which is under the supervision of the state and county health departments.

Mayor Given Honorary Membership—The Wayne County Medical Society presented a certificate of honorary membership to John W. Smith acting mayor of Detroit, October 30. The scientific program consisted of a clinical pathologic conference under the direction of Dr. Clarence I. Owen assistant professor of pathology Detroit College of Medicine and Surgery. Following the conference a reception was held in honor of Mr. Smith.

Physician Honored at Home Coming—Dr. Benjamin Clyde Yale was honored in a golden harvest jubilee celebration November 10 in recognition of the completion of fifty years in the practice of medicine. Mr. George Gough shared the anniversary with Dr. Clyde. A civic holiday was declared by the mayor. The event was in the nature of a home coming, commemorating the work of the pioneers and early settlers of the community where Dr. Clyde and Mr. Gough have lived for many years. More than 200 early residents acted as an honor guard for Dr. Clyde and Mr. Gough and books containing their signatures and tributes were presented to the two guests of honor. Speaker included Dr. Alpheus F. Jennings, Detroit and Mr. H. I. Ford of Lapeer. The principal speaker intro-

duced by Dr. Donald A. Pollock, was Dr. Udo J. Wile, professor of dermatology and syphilology University of Michigan Medical School Ann Arbor who reviewed the history of the class of 1883, of which Dr. Clyde was a member. Dr. William J. Mayo, Rochester, Minn., is one of the thirty-seven surviving members of the class of 117 students.

MISSOURI

Portraits Unveiled—Portraits of the late Dr. Joseph S. Lichtenberg, Kansas City were unveiled at St. Joseph and Menorah hospitals, October 9. Dr. Lichtenberg had been a member of the staff of St. Joseph Hospital for thirty-six years and of Menorah Hospital since its founding.

Centennial Celebration of Beaumont's Experiments—The one hundredth anniversary of the publication of William Beaumont's "Experiments and Observations on the Gastric Juice and the Physiology of Digestion" was celebrated by the St. Louis Medical Society November 21, the one hundred and forty-eighth birthday of Dr. Beaumont. The program was as follows:

Dr. Major G. Seelig: Biographical Sketch of William Beaumont.
Dr. Joseph Erlanger: William Beaumont's Experiments and Their Present Day Value.
Dr. Robert E. Schlueter: Dr. Beaumont as a St. Louisan.
Dr. Louis H. Behrens: Our Civic and Medical Debt to Beaumont.

Photostatic copies of Dr. Beaumont's letters and documents, with other historical objects connected with his life and work, are on exhibition in the society's headquarters. Dr. Beaumont was president of the St. Louis Medical Society in 1840.

In Practice Fifty Years—A dinner was given by the Clay County Medical Society October 26 in honor of three members who had completed fifty years in the practice of medicine: Drs. Walter C. Hamilton and John W. Epler, Kearney, and John H. Rothwell, Liberty. Dr. Hamilton, who has practiced fifty-four years, was unable to attend. Dr. Clinton K. Smith, Kansas City, was the principal speaker, and invited guests included Dr. Spence Redman, Platte City, who has practiced in Platte County more than fifty years. October 11, Dr. Robert J. Morton, Clay Center, was feted at a banquet given by seventy-five physicians and dentists of the county, in recognition of his completion of a half century in medicine. Speakers on this occasion included Dr. John T. Axtell, Newton, Kan., and Dr. Jabez N. Jackson, Kansas City who discussed cancer of the breast. Dr. Morton was formerly state senator.

Cancer Education Campaign—November 8 marked the opening of a cancer education campaign in Missouri, sponsored by the Missouri State Medical Association with the initial session presented in Nevada by Drs. Ernest Kip Robinson and Ferdinand C. Helwig, Kansas City. Dr. Joseph T. Hornback, Nevada, counselor of the sixteenth district, presided, and the program was in charge of Dr. Earl C. Padgett, Kansas City. The counselor districts of the state have been divided into five districts, and teams have been organized in various centers. Cancer of the breast will be the topic for discussion this year. Every session will include a public meeting for lay education, a diagnostic clinic for the benefit of the local medical profession, and a scientific program with the county medical societies. At the recent meeting of the state association in Kansas City the committee on cancer presented a recommendation urging that an educational campaign on cancer for both lay and professional groups be inaugurated in conjunction with the committee on postgraduate course and the state committee of the American Society for the Control of Cancer. The work is in charge of Drs. Padgett, Floyd H. Spencer, St. Joseph, John W. Williams, Jr., Springfield, Marcus Pinson Neal, Columbia and Ellis Fischel, St. Louis.

NEW YORK

Hospital News—Memorial Hospital of Greene County Catskill was dedicated with formal ceremonies November 2. Drs. Lyle B. Honeyford, president of the Greene County Medical Society, George L. Branch, chairman of the hospital medical board and Thomas Parran, Jr., Albany, state health officer made addresses. The hospital which was opened for patients in August, has twenty-four beds and ten bassinets.

Society News—Dr. Richard S. Farr, Syracuse was elected president of the New York Society of Industrial Medicine at the annual convention in Rochester November 2. Among the speakers was Dr. Frederic Jay Cotton, Boston on "Treatment of Elbow Fractures."—Drs. Thomas E. Walsh and Wardner D. Ayer, Syracuse addressed the Onondaga County Medical Society November 7 on "spondylolisthesis and blood dyscrasias, respectively."

Association of Public Health Laboratories—At the autumn meeting of the New York State Association of Public Health Laboratories in Albany, November 3, Dr Rufus I Cole, New York, was the guest speaker, on "The Outlook for Overcoming Pneumonia." Among other speakers were Dr Leroy U Gardner, Saranac Lake, on "Laboratory Diagnosis of Silicosis", Dr Ruth Gilbert and Marion Coleman, Albany, "Discovery of Carriers of Pathogenic Micro-Organisms Among Food Handlers," and Dr Richard J Lebowich, Gloversville, who reported a case of measles encephalitis. Dr Ellis Kellert, Schenectady, is president.

New York City

Personal—Dr Max Lederer was the guest of honor at a dinner given by the department of pathology of the Jewish Hospital of Brooklyn, recently.—Dr Oswald Swinney Lowlesley addressed the Spanish Urological Society and the French Urological Association on "Surgery of the Kidneys" during a recent trip to Europe.—Dr William Hallock Park, director of laboratories, New York City Department of Health, was one of five alumni of the College of the City of New York who received the Townsend Harris Medal for achievement at the annual alumni dinner, November 18. This award was established two years ago by the class of 1906 and was conferred for the first time. Dr Park is a graduate of the class of 1886.

Anniversary of Anesthesia Society—The tenth anniversary of the American Society of Regional Anesthesia was observed at a special meeting at the New York Academy of Medicine, November 8, called the "George W Crile Meeting." Dr Crile delivered a paper on "Anesthetics, Narcotics and the Sick Man", Dr Edward M Livingston, his official address as president of the society, on "Regional Anesthesia. Its Place in Medicine," and Dr Louis Gaston Labat, an address on "Clinical Manifestations of Sympathetic Disorders and Their Response to Nerve Blocking." Dr Carl Koller, who in 1884 introduced cocaine into surgical practice, according to the program of the meeting, was also a guest.

Society News—The Baltimore Medical Club of New York will hold its annual dinner at the Fraternity Clubs Building, December 7. The guest speaker will be Dr Charles Bagley, Jr, Baltimore, on the history of modern neurologic surgery. Dr Frank R Oastler will show lantern slides of Yellowstone Park.—Drs William Bierman and Homer F Swift addressed the Harlem Medical Association, November 1, on "Significance and Therapeutic Value of Hyperpyrexia" and "Rheumatic Fever," respectively.—Dr Jacob Arnold Barger, Rochester, Minn., addressed the Medical Association of the Greater City of New York, November 10, on "Differentiation of Varieties of Colitis According to Pathology and Management."—Dr Louis Hausman delivered the third afternoon lecture of the New York Academy of Medicine, November 17, on "Acute Infections of the Central Nervous System from the Standpoint of the Practitioner." Dr Charles R Austrian, Baltimore, delivered the fourth, November 24 on "Differential Diagnosis of Pulmonary Disease with Special Reference to Tuberculosis."—A series of eight lectures on "Personality Education and Adjustment in Camp" is being offered to camp directors, parents, counselors and others who plan to engage in camp activities, by the Camp Directors Association of America and the Association for Personality Training. Dr Ira S Wile delivered the first lecture, November 21, on "Personality and Mental Hygiene in Camp." They will continue through January 16.—Dr Charles H Frazier, Philadelphia, addressed the Bronx County Medical Society, November 15, on "Brain Tumors: Diagnosis and Prognosis."—Dr Harry Koster delivered a Friday afternoon lecture before the Medical Society of the County of Queens, November 17, on "Diagnosis and Treatment of Peripheral Vascular Disturbances."—Drs Frederick Tilney and James P Warbasse addressed the Medical Society of the County of Kings, November 21, on "Medical Problems in Delinquency" and "The Medical Library and Its Relation to Medical Culture," respectively.

NORTH CAROLINA

Society News—Drs Stephen W Davis and Lester C Todd addressed the Mecklenburg County Medical Society, Charlotte, October 17, on "Idiopathic Hypochromic Anemia" and "Food Allergy with Special Reference to Migraine," respectively. Dr Archibald A Barron, Charlotte, addressed the society, October 3, on diagnosis of epidemic encephalitis, myelitis and meningitis.

New Officers of State Board of Health—Dr Carl V Reynolds, Asheville, was elected president of the North Carolina State Board of Health November 13, and Dr Sylvester

D Craig, Winston-Salem, vice president and chairman of the executive board. Dr James M Parrott, Raleigh, remains secretary. Dr Hubert B Haywood, Raleigh, and Mr James P Stowe, Charlotte druggist, are new members of the board recently appointed by the governor.

PENNSYLVANIA

Memorial Lecture—Dr Russell L Haden, Cleveland delivered the Emmerling Memorial Lecture under the auspices of the Pittsburgh Academy of Medicine, November 28. Dr Haden's subject was "Clinical Significance of Variation in the Erythrocyte of Man."

Society News—A symposium on diabetes mellitus was presented before the Washington County Medical Society, Washington, November 8, by Drs Cortlandt W W Elkin, Pittsburgh, John W G Hannon and Orville G Lewis, Washington.—A public health meeting featuring Pennsylvania Health Day was held by the Allegheny County Medical Society, Pittsburgh, November 15. Dr Howard A McCordock, St Louis, related "The Story of the St Louis Sleeping Sickness Epidemic" and Dr Logan Clendenen, Kansas City, spoke on "The Heritage of Medicine." At the November scientific meeting of the society, November 21, papers were presented by Drs John M Johnston, on "Failure of the Pulmonary Circulation", Joseph H Barach and David H Boyd, "Generalized Edema, Water Retention and Its Response to Intravenous Acacia", and Dr Samuel Glenn Major, "Tumor of the Mouth and Jaw."—Dr Thomas T Sheppard, among others, addressed the Pittsburgh Academy of Medicine, November 14, on "Thyroid and Congestive Heart Failure."

Philadelphia

Personal—Dr Addinell Hewson, professor of anatomy and histology in Temple University Dental School, was guest of honor at an informal dinner given by the alumni association of the school, October 23.—Drs Herbert M Goddard and John H Frick were guests of honor at a dinner, October 30, given by the Physicians Square Club. Dr Goddard is president of the national organization and Dr Frick of the Philadelphia branch.—Dr William N Parkinson, dean, Temple University School of Medicine, has been elected a member of the board of trustees of the university.

Society News—Drs John T Farrell, Jr, Louis H Clerf and John B Flick will discuss diagnosis and treatment of bronchiectasis at the meeting of the Philadelphia County Medical Society, December 13.—Speakers before the Northern Medical Association of Philadelphia, November 20, were Drs Nathan Blumberg, on collapse therapy, Pascal Brooke Bland, intracranial hemorrhage in the new-born, and Fielding O Lewis, tonsils in relation to systemic infection.—Dr Ross H Thompson addressed the Philadelphia Neurological Society on "Encephalomyelitis Dissemminata Following an Ascending Neuritis."

TENNESSEE

Personal—Dr Oscar S Hawk, Kingsport, has been appointed medical director of Central State Hospital, Nashville.—Dr Eugene L Bishop, state health commissioner, has been appointed director of health for the Tennessee Valley Authority, according to recent newspaper reports.

Society News—Dr Warren T Vaughan, Richmond, Va., addressed the Sullivan-Johnson Counties Medical Society, Bristol, November 1, on allergy in general medicine.—Physicians in Fayette and Hardeman counties recently organized the Fayette-Hardeman Medical Society, with Dr George T Brinkley, Fayette Corner, as president. Meetings will be held at the Western State Hospital, Bolivar.—Drs John L McGehee and James R Remberger, Memphis, addressed the Gibson County Medical Society, Trenton, October 30, on tumors of the breast and toxemias of pregnancy, respectively.—Dr Thomas D Moore, Memphis, was elected president of the Walnut Log Medical Society and Dr Charles Leroy Denton, Dyersburg, reelected secretary at the annual meeting at Reelfoot Lake, October 26. This society is made up of physicians of southwestern Kentucky and northwestern Tennessee.—The first of a series of meetings on child health care sponsored by the Tennessee State Medical Association and the American Academy of Pediatrics was held in Dyersburg, November 1, under the auspices of the Dyer, Lake and Crockett Counties Medical Society. Speakers were the following from Memphis: Drs William T Pride, on "Prenatal Care and Its Effect on the Child", Richmond McKinney, "Effect of Hypertrophied Adenoids and Diseased Tonsils on the Growing Child", Edward C Mitchell, "Care of the Well Child" and Laurence J McRae, DDS, "Importance of Child Dentistry."

VIRGINIA

Personal—Dr Ernest L Stebbins, Richmond of the staff of the state department of health, has been appointed director of the Henrico County health department succeeding Dr Allan L McLean, who recently resigned to become associate professor of preventive medicine at Dalhousie University Faculty of Medicine, Halifax, Nova Scotia

GENERAL

Wellcome Prize Awarded—The Wellcome Prize for 1933, consisting of \$500 and a gold medal, was awarded by the Association of Military Surgeons of the United States at its recent annual meeting in Chicago to Major Edgar Erskine Hume, librarian of the Army Medical Library Washington D C, for his essay on 'The Value of Studies in Health and Sanitation in War Planning'

Society News—At the annual Mississippi Valley Conference on Tuberculosis in Kansas City, October 5-7, Herbert M Cass, Huron S D was elected president, Dr Charles H Lerrigo, Topeka, Kan, vice president, and A W Jones, St Louis, secretary. Dr Arthur A Pleyte, Milwaukee, was chosen president of the Mississippi Valley Sanatorium Association, Dr William W Buckingham, Kansas City vice president, and Dr David O N Lindberg Decatur, Ill, secretary. The meeting in 1934 will be held in Cedar Rapids, Iowa

National Academy of Sciences—The autumn meeting of the National Academy of Sciences was held at Massachusetts Institute of Technology, Cambridge, November 20-22. Among medical subjects of papers were the following

- Allan W Rowe, Ph D Boston Gaseous Metabolism of Some Dwarfs and Giants
- Dr Roy G Hoskins Boston The Schizophrenic Psychosis with Special Reference to Homeostasis
- Henry C Sherman Ph D and L A Ellis New York Necessary Versus Optimal Intake of Vitamin G (B)
- Dr Simon Flexner New York The Nerve Path of Infection in Poliomyelitis and Its Significance
- Dr John F Tulton Jr New Haven Conn Functions of the Premotor Area of the Cerebral Cortex
- Walter R Miles Ph D New Haven Conn Ocular Rotation Centers for the Two Primary Axes

Prevalence of Communicable Disease—The number of cases of poliomyelitis reported to the U S Public Health Service for the four weeks ended October 7 for the country as a whole was 1,271, a decrease from 1,412 reported for the preceding four week period. These figures are higher than those for the corresponding period of 1932 but much less than those for the epidemic years 1931 and 1930, when 4,122 and 2,236 cases, respectively, were reported in the corresponding four weeks. Typhoid reached the lowest point for this period in recent years, with 3,093 cases reported, as compared with 3,553 in 1932. The incidence of scarlet fever for the period 8,107 cases was approximately the same as for the same period last year but was considerably in excess of the incidence for 1931, 1930 and 1929. The numbers of cases reported in those years were 6,428, 5,220 and 6,198 respectively. The prevalence of meningitis 130 cases was the lowest for this period in the five years for which data are available.—Newspapers have recently reported the closing of schools in Matherville Ill, because of an outbreak of whooping cough, in Vassalboro, Maine for infantile paralysis, and in Owensville Ind, for scarlet fever.—Two cases of smallpox, one of them fatal, in El Paso, Texas led the city health officials to vaccinate 100 nurses and employees in a general hospital to which one of the patients was taken before his illness was diagnosed and thirty five persons in the business concern where the other was employed.—More than 1,000 children in Dallas were immunized against diphtheria during the week ended November 4 in a fight against increasing incidence of the disease. Thirty-eight new cases were reported during that week as compared with twenty nine the previous week.

Deaths in Other Countries

Arthur W Meyer chief surgeon of the West End Hospital Charlottenburg Germany known for his operations for pulmonary embolism November 14 of a bullet wound self inflicted.—Ernest Edmund Maddox, London ophthalmologist known for his work in the correction of squint November 10 aged 73

CORRECTION

Chronic Ulcerative Colitis—In Dr Buie's closing discussion of the article by L A Buie and J A Bergen (THE JOURNAL November 4 p 1466) the clause that reads 'From 1,200 patients 1,816 strains of the organism which we believe to be of etiologic significance should have read 816 strains

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 11, 1933

The Reform of the Medical Curriculum

The agitation for the reform of the medical curriculum continues. The Edinburgh Students' Union held a meeting, which was addressed by Dr C. M. Wilson, dean of St Mary's Hospital Medical School. He said that there were two camps in the battle of the curriculum. The majority of teachers were convinced that a student must collect and store as many facts as possible. The minority, to which he belonged, believed that it was impossible to insure the public by merely stuffing students with facts, that, so far as any of us were safe, it was in proportion as our wits worked accurately in emergencies. The five years of the student's life should be devoted to developing his reasoning powers, to training and testing habits of thought, to educate him so that when he went out into the world he might be able to educate himself. The medical schools had become too concerned with the mechanical acquisition of facts. Surgeons complained that students, when they came from the dissecting room into the wards, shed their anatomy like a worn out garment. When they asked the anatomy professor whether his students would not remember their anatomy better if its clinical applications were pointed out, he replied that he was teaching anatomy as a pure science. But such shedding of anatomy pointed to sheer bad teaching. The student suffered from a glut of talking, which was not teaching. The evil of modern medicine was that it was too much removed from the bedside.

Dr Wilson also attacked the examination system. Dr Dickson, a member of the British Medical Association special committee on medical education, said that the curriculum should be directed to the turning out of the general practitioner, not of the specialist. His general education must be of a high order. He must acquire a sound knowledge of the elementary medical sciences, of which the teaching should be of an applied and coordinated character. He should be a specialist in minor injuries and minor surgery generally, familiar with common diseases, and have a thorough practical knowledge of midwifery. Far too much time was spent in the dissection of the dead body.

The following resolution was adopted unanimously. The present system of medical education is unsatisfactory. Important changes in the curriculum are essential, whereby more facilities for instruction in practical medicine should be available and more assistance given in the principles and practice of preventive medicine. The time for this can be obtained by modification of the teaching in the earlier scientific subjects, with some revision of the time devoted to the special departments of medicine and surgery.

The Osteopaths

The agitation for the recognition of osteopaths continues in the columns of the *Times*. Persons write the usual letters to the effect that after the medical profession failed to benefit them they were cured by osteopaths. The profession is accused of prejudice. But Lord Moynihan points out that no more importance can be attached to unorthodox medicine than to unorthodox chemistry or unorthodox physics. Medicine is at last based on foundations common to all science. He does not deny to the osteopath some competence in manipulative methods. The profession does not grudge him success, though it recognizes its infrequency and is not unfamiliar with its perilous accompaniments and its fatal disasters. Opposition rests on something more fundamental on his complete lack

of adequate training in the most elementary principles, which underlie all diagnosis, and in application of those principles in directing treatment. Such principles are based on a multitude of sciences—*anatomy, physiology, pathology and the like*—and on that trained clinical observation which seeks to determine not only the morbid local condition but also its correlation of the patient. Only by such inquiry can trustworthy diagnosis ever be made, and without it empirical treatment is haphazard. The expert application of a method, good perhaps in itself but unsuited to the local or general condition, can bring no advantage and may do irreparable harm. The practitioner who has failed to pass through a full curriculum is devoid of sufficient knowledge of disease or of the methods by which apparently similar maladies can be differentiated. This accounts for the frequent disasters of osteopathic treatment. Those who practice "unorthodox medicine" are not practicing "medicine" at all. They are as competent to do so as a student would be who spoke in terms of higher mathematics and did not know elementary arithmetic.

Dr Farquhar Buzzard, regius professor in the University of Oxford, in discussing the claim of the osteopaths for registration points out that the object of the Medical Register is to enable any one seeking medical aid to distinguish practitioners who have had sufficient training for the safety of their patients from those who have not. If there were a register of osteopaths or of chiropractors the layman would assume that his health was safe in their hands. Osteopathy is fighting a losing battle in America against rival cults, which have the advantage of novelty. Osteopathy is based on the theory that most, if not all, diseases are caused by the pressure of misplaced bones on nerves and vessels and can be cured by replacement. However attractive by reason of its simplicity this theory is contradictory to the principles of pathology as taught in every medical curriculum in the civilized world.

PARIS

(From Our Regular Correspondent)

Oct 18 1933

International Congress of Plastic Surgery

The annual period of congresses has begun. Since the close of the vacation period and before the opening of the universities, various special societies have held their congresses, some being of international scope. The halls at the Faculté de médecine, which are always at their disposal, are scarcely adequate for the many sessions. As some of the congresses are held simultaneously, a report cannot be given until after the publication of their proceedings. That is the case with the Congress of Surgery, which lasts a whole week.

The Congress of Reproductive and Esthetic Plastic Surgery is a comparatively small congress, although its importance is increasing from year to year, which is peculiar since its field is rather restricted. This year the congress was international and many foreigners attended. The sessions lasted two days, under the chairmanship of Prof Jean Louis Faure and Dr Dartigues, its founder. Colonel Picot, president of the Association des mutilés de la face victimes de la guerre, and member of the chamber of deputies sat on the platform, with a face frightfully slashed a living witness of the need of reparative and cosmetic surgery. Prof Jean Louis Faure in his presidential address, pointed out the shackles with which, all too often, the courts retard the development of plastic surgery when they impose crushing penalties on unfortunate operators on the pretext that cosmetic interventions are not resorted to for the sake of saving lives. Heavy fines are frequently imposed on operators when their clients do not obtain the results they anticipated. Cosmetic surgery, Professor Faure emphasized, has become more dangerous for the surgeons than for their clients.

Professor Manna of Rome spoke on the same subject and demanded that the limits of the responsibility of the surgeon in such matters be clearly defined. Dr Bourguet presented the results of his research on the plastic surgery of the nose and the ears. Dr Eckstein of Berlin spoke on the surgery of the face and the neck. Dr Claon of Paris, Dr Burian of Prague and Dr Lluesma Uranga of Madrid presented different types of mammary surgery and repair of the breast, in which connection an excellent sound film of Dr Dartigues was projected. More than forty communications were read on widely different topics.

Meeting of French-Speaking Radiologists

The Congress of French-Speaking Electrotherapists and Radiologists was held for the first time, under the chairmanship of Dr Belot, who was assisted by Professor d'Arsonval, sometimes called the father of modern electrotherapy by reason of his discovery of the high frequency currents and the short waves. Among the foreigners present was Mr Coolidge, creator of the Coolidge tube. An important paper was presented by Ledoux-Lebard and Garcia Calderon on the technique of the radiologic exploration of the mucosa of the large intestine. Gilbert and Karnka of Geneva described the clinical results of the lesions revealed by this exploration. The second communication, offered by Professor Rechou of Bordeaux, was designed to explain the new applications of short and ultra short waves in therapeutics.

At the close of the congress special ceremonies were held at the Hôpital de la Pitié, during which Professor d'Arsonval bestowed a plaque on Dr Delherm, head of the department of electroradiology at the Hôpital de la Pitié, in honor of his twenty-five years of hospital service.

Congress of Gynecologists and Obstetricians

The Association des gynécologues et obstétriciens, presided over by Mr Henrotty of Antwerp met in Paris, October 7, under the chairmanship of Professor Couvelaire. In his presidential address the latter vehemently opposed the practice of subjecting certain persons to compulsory sterilization. It is a mystic idea to expect to improve the quality of a race by such absolutely arbitrary methods. Many men of genius have been the offspring of degenerates and neuropaths. While eugenics is a legitimate ideal, it should be based on different conceptions.

The first topic on the program was the surgical treatment of placenta praevia, on which Paucot of Lille and Reeb of Strasbourg presented papers. In a series of 1,724 cases, they found that the mortality of mothers, as a result of obstetric methods, amounted to 782 per cent. They emphasized that wide rupture of the membranes is responsible for only 240 per cent of the mortality in mothers and constitutes therefore a preferred form of treatment. The child mortality ranges around 51 per cent, although it is only 34.5 per cent in wide rupture of the membranes. The statistics for the surgical methods reveal the somewhat discouraging figure of 911 per cent of mortality among the mothers in a series of 477 interventions but the statistics extend over the last ten years and if one considers only the low cesarean operation the mortality is only 433 per cent. The low cesarean operation is thus shown to be the preferred method, so long as it is employed by surgeons only in from 10 to 30 per cent of the cases of hemorrhage. The child's chances have improved since the stillbirths have dropped to 2242 per cent. The speakers stated that hemorrhages due to low insertion of the placenta do not justify the systematic use of surgical methods, such methods are indicated chiefly because of wide rupture of the membranes. With this exception, one should resort to surgical methods. The low cesarean operation has been shown to be superior to any other treatment from the standpoint of the safety of the child. Hysterectomy is a procedure to which it is sometimes absolutely

necessary to resort to save the life of the mother. A long discussion followed. The two camps represented by the advocates of surgical intervention and the defenders of perforation of the membranes, with recourse in case of grave hemorrhage, to the transfusion of blood, held their ground. Professor Brindeau favors the conservative low cesarean operation in infected cases when transfusion has been ineffective. Professor Hauch of Copenhagen remains loyal to the Braxton Hicks maneuver and to the balloon dilator, although he admits that the fetal mortality is higher. He favored, however, more low cesarean operations. Metzger, Cathala Leroux (Nantes), Essen Moeller (Sweden), Masson (Bordeaux), Keller (Strasbourg), Cova (Turin), Delmas (Montpellier), Arricaza (Spain), de Snoo (Utrecht), Snoeck (Brussels), Labhardt (Basel) and Levy-Solal described in turn their preferences. The discussion led to no definite conclusion unless it is that the obstetrician should allow himself to be guided by the events.

The second topic on the program was pelvic tuberculosis, and four papers by Moulonguet, Brocq, P. Gibert (Lausanne) and Rochat (Lausanne) were presented. The blood origin of this form of tuberculosis is no longer questionable and its beginning in the tubes is equally certain. Under such conditions marriage is contraindicated. Tuberculosis of the cervix is the least frequent, that of the adnexa the most frequent (80 per cent). The diagnosis is difficult. Brocq reported good results in cases with ascites, from simple laparotomy followed by prolonged heliotherapy. Gibert recommended the use of ultraviolet rays in preparing the patient for operation and also following the laparotomy. Professor Daniel of Bucharest opened the discussion by citing 266 operative cases, 60 per cent of which presented simple genital lesions and 40 per cent peritoneal lesions. Mr. Muret (Lausanne) confirmed that the uterus is affected in 50 per cent of the cases. He advocated conservative surgery and highly endorsed heliotherapy. Mr. Villard (Lyons) is an advocate of surgical treatment but the operation must be adapted to the anatomic forms; must be conservative and must avoid the risks of intestinal perforation. J. L. Faure said that hysterectomy must be resorted to in the grave cases.

The last paper on "Treatment of Disorders Following the Artificial Menopause," upheld the hormone method of treatment and that of grafts. The disorders of the surgical menopause are essentially vasomotor or rheumatismal but sometimes of a nervous or psychic order. Organotherapy gives good results in the former cases but is less certain in the latter. It should be applied early, immediately after recovery from the operation on nine or ten days each month at a time corresponding to the date of the menses.

BERLIN

(From Our Regular Correspondent)

Oct 16 1933

Fruit Juices in the Diet of Patients

Prof. Carl H. von Noorden, an authority on metabolism, has issued some interesting statements on the value of unfermented fruit juices in the diet of patients. In most fruits, unless enriched by the addition of sugar, the caloric content is too low to constitute the major portion of the total food requirement for an adult. In latitudes with a hotter climate that furnish products with a high sugar content (figs, dates, bananas, orange, grapes, sugar cane, melons, pineapples), these may supply often more than half of the food requirement. In Germany, the home-grown fruit on the average might cover from 10 to 12 per cent of the total food requirements of the German population, while the imported fruits might contribute about 10 per cent more. In Germany, fruit plays the part of a highly valuable supplementary food. The enjoyment derived from eating fruit comes not only from the sugar content but also from the weak organic acid present in varying propor-

tions and from the abundance of savor. The mineral substances in the most common varieties of fresh fruits amount to only from 0.5 to 0.75 per cent of the weight. They are, however, of considerable value, because they occur in different proportions than in animal foods, vegetables and cereals. Of great significance for the diets of certain patients is the fact that most fruits have a low sodium chloride content. The vitamin content is important. In their abundance of vitamins, combined with a manifold composition, tomatoes offer a valuable addition to the diet. Tomatoes may be said to constitute a transition between a fruit and a vegetable. The expressed juice of most of the larger fruits is poor in vitamins, since the latter are contained chiefly in the seeds and in the outer covering. Oranges and tomatoes, however, are an important exception, since their expressed juices contain most of their vitamins. Since in most countries, except for the tropical regions, fresh fruits are gathered only at certain seasons and then usually in such large quantities that it is difficult to dispose of them before they deteriorate, it is a common practice to convert them into a more stable form. The conversion of the expressed juices of fruits into alcoholic beverages by a process of fermentation usually takes care of most of the surplus. For healthy persons, unfermented fruit juices are valuable as supplementary food by reason of the caloric content, which, if the sugar content is high, may equal that of the best whole milk, and with average sugar content will correspond to two-thirds that of whole milk. Another good effect of an abundant ingestion of fruit and of fruit juices is the prophylaxis against diarrheas. Von Noorden emphasized that there is no other food substance that so quickly, so emphatically and so immediately provides the muscles with energizing material as the types of sugar contained in fruit juices. Every other type of food, including ordinary table sugar, requires previous transformation through digestive processes.

An extensive use of unfermented fruit juices is to be considered in selecting the diet for a patient, for example in acute and chronic infectious diseases, in which, to be sure theoretically, a selection of various food products is to be recommended but from the practical point of view, a patient often gives evidence of loss of appetite which may prevent the application of a mixed diet. Well-cooled fruit juices and sweet ciders or musts as a supplement to or in place of fresh or cooked fruits sit lightly on the stomach and increase the desire for other food. A patient confined to bed may often be given up to 1 liter of unfermented cider or must during the twenty-four hour period which will usually supply about one-fourth of the total food requirement. Another important effect which is produced by no other food that is admissible in grave disease conditions is the action on intestinal activity. If this effect is desired to a marked extent, certain conditions easily to fulfill must be observed: the fruit juices, namely, must be taken early in the morning on an empty stomach. For this purpose, from 0.25 to 0.3 liter is sufficient, the whole amount well-cooled, being taken within a few minutes. Von Noorden called attention also to the good effects of fruit juices on renal activity, especially in febrile patients and in disturbances of the circulation. The effect is at least as great as (usually greater) and certainly more conservative than the action of numerous so-called diuretics of the older materia medica. This effect is often striking in febrile patients who are inclined to perspire, for example in tuberculous patients. If by means of fruit juices ample diuresis is produced and waste products are thus washed away, the weakening sweats often subside quickly to a great extent, although not always, since the cause of the condition varies considerably. Even more striking is the cessation of the trouble, some sweats occurring in obese patients as soon as it proves possible by means of fruits and fruit juices with exclusion of other foods to increase markedly the elimination of fluids and salts through the kidneys.

Births, Deaths, Marriages and Divorces in Prussia

Attention was called recently to the great decline in the birth rate and to some of the measures that the federal government has adopted to increase the number of marriages. In recently published figures for Prussia during the first quarter of 1933, a further marked decline in the birth rate is reported, there having been only 157,070 births, or 55 per cent fewer than for the corresponding quarter in 1932. On the other hand, there were 142,531 deaths, or 16 per cent more than for the corresponding quarter in 1932. The excess of births over deaths had dropped to 15 per thousand as against 44 per thousand in 1932. The number of marriages was 59,555, or 6 per cent fewer than in 1932. It may be added that the recent financial aid given to brides who fulfil certain conditions was not in operation at that time.

In Prussia in 1932 there were 314 divorces for each 10,000 marriages, as against 30 in 1931. Two thirds of the divorces were granted in large cities, Berlin having reported a rate of 85 per 10,000 marriages. In one half of the divorces, the husband was declared to be the guilty party, in one third of the cases both the parties to the marriage contract were declared guilty, and in only one sixth of the divorces was the wife found to be the guilty party. In considering these statements, account must be taken of the peculiar laws in force in Germany. This high divorce rate affects not only so-called inflation marriages (that is, belonging to the period immediately following the war) but 13 per cent of the divorces concern prewar marriages, many of which had been contracted more than thirty years previously. Only 8 per cent of the divorces in 1932 involved annulment of marriage contracts entered into during the war.

PRAGUE

(From Our Regular Correspondent)

Oct. 27, 1933

Changes Recommended in the Curriculum

The report of the committee for the reform of medical study headed by the dean of the Brno faculty of medicine, Prof. Bohuslav Boucek, has been published. The report deals in its first part with fundamental problems in the present crisis in medical education. The main requirement for improvement in the present overcrowding of medical schools is a proper regulation of the admission of students. According to the report, the number of medical students admitted to the faculty of medicine should be reduced to the actual need for new practitioners in the country and to the actual teaching capacity of the respective faculties of medicine. Another radical change which the report recommends is the concentration of study in a given period of time on a certain subject, in contrast with the present system of teaching a diversity of topics to students simultaneously. The report sees a great advantage in this concentration not only to the medical student who will be able to devote himself fully to one subject after another but also to the teaching staff, as only a portion of the year would be allocated to teaching, the rest of the time being free for scientific work and research. The report expects that more individual instruction will result from the measures recommended. The examinations of the present day will be replaced by long time observation by the teaching staff, with the final examinations becoming a mere formality. The report anticipates financial difficulties in connection with this reform but maintains that a radical improvement in the education of medical students is not possible unless the numerical relation of the students to the teaching staff is radically altered. The medical curriculum proposed in the report would cover two years devoted to theoretical studies and three years to clinical studies. The teaching year is subdivided into three trimesters. Each one

of the trimesters would have twelve full weeks of work, with the last week devoted to examinations. The schedule of the day's work prescribes as a first lesson for every day an hour and a half of lecturing followed by an hour and a half of practice. The morning session is terminated by another lecture of an hour and a half by assistants in the respective medical subjects. The subordinate teaching staff is emphasized in the report in contrast to the present situation, in which most of the teaching is in the hands of the chiefs of the respective departments. The afternoon session follows the same schedule. Among the subjects recommended for the first two years of theoretical studies, a special curriculum on nursing is a novelty. According to the report it should be an introduction to hospital work in connection with the topics that are presented today under the heading "medical propedeutics." All examinations in the theoretical subjects should be over by the end of the second year, so that clinical work would start immediately with the beginning of the third year. This is a great advantage over the present method, whereby usually the first half of the third year is lost on examinations in theoretical subjects. The three clinical years are divided so that the mornings are devoted to hospital work and the afternoons to such theoretical subjects as pathologic anatomy, hygiene, experimental pathology and pharmacology. Social medicine is introduced as an obligatory subject in the three clinical years. The report of this committee represents the most complete project for the reform of medical study that has been presented in Czechoslovakia. It should be an important step toward reform. The committee consisted of serious and honored members not only of the teaching staff of the faculty of medicine of Brno but also of representatives of medical organizations and prominent practitioners.

International Meeting of Otorhinolaryngologists

A session of the Collegium Otorhinolaryngologicum Amicitiae Sacrum was held in Prague in September, with Prof. Antonin Precechtel in the chair. This is an international association founded on the initiative of Dutch otorhinolaryngologists. The membership of each country is limited to ten persons carefully selected according to their scientific qualifications. The annual session held in various capitals is usually of a high scientific standard. The Prague session was attended by forty nine members representing fifteen different countries, including the United States. Germany did not send its representatives as was customary in preceding years. The main feature of the session was a report by Prof. S. J. Crowe of Baltimore, who spoke on the Wever-Bray phenomenon on the basis of extensive experimental data. The experience gained at this session showed again that similar meetings in which the membership is limited to selected experts has more value for the advancement of knowledge than meetings with a large audience with varying standards of knowledge and experience.

A Region Not Affected by the Depression

A conference on a regional public health plan was held, October 15, in the city of Zilina which is the seat of the largest shoe factory on the continent. The flourishing shoe industry has brought to this region powerful financial means, which are to be used to help develop the whole territory of eastern Moravia. This section of Czechoslovakia is hilly and has poor natural resources. The health standard of the population has always been low. Endemic goiter is present in the higher sections while in the valleys hyperthyroidism prevails. At this meeting a committee was organized to study the public health problems of the territory and to provide with the assistance of economists, geologists, architects and agriculturists a plan for the development of this territory. It appears that a great deal of the preliminary work has already been accomplished.

An encouraging part of the program is that the region has not been affected by the economic depression, because the local shoe industry was able to maintain employment on a high level. This experiment deserves the interest of the medical profession, because the initiative in the undertaking is in the hands of physicians and the whole plan will be formulated on the basis of public health requirements.

New Rules of Ethics

New ethical rules have been published for the chamber of physicians of the province of Bohemia. They prescribe loyal obedience to the chamber and an ethical attitude toward patients. A physician is allowed to practice in only one community. He may visit a patient in another place only in case he is called there, but he cannot maintain another office there. A physician's office sign shall contain only his name, his office hours, his degrees and the type of practice he is engaged in under the rules prescribed by the chamber. A physician is not allowed to place his sign on any other building than his own house. He is not allowed to place any other information on his stationery or other printed matter. The same applies to advertising, which is allowed only for three months after the opening of practice or for three weeks after any change of his practice. Advertising through the distribution of leaflets to the public is strictly forbidden. Physicians are allowed to circulate leaflets about their practice only to physicians of their territory when they start practice or if any change in its form takes place. Any other form of concealed advertising such as articles or visits, is prohibited. The splitting of fees and remunerations for referring patients is a serious offense against the rules. Medical fees must be kept within the limits prescribed by the chamber. Treatment without a personal physical examination of the patient is not allowed. A physician can apply for appointment only if there is a vacancy in a position. A physician must not undertake the treatment of a patient who is being treated by another physician. This does not apply to first aid. An exception is allowed also in case the patient visits the physician in his office. In case several physicians are called, the one who arrives first takes over the treatment of the patient. Inspection visits prescribed by insurance societies must be made only in the presence of the attending physician. In case a medical practitioner is sick or absent, the physician who replaces him is obliged to defend most conscientiously the interests of his colleague. Every physician is obliged to assist another physician in case of necessity. A consultation with other physicians must be granted by the attending physician if the patient requests it. The consulting physician must safeguard conscientiously the interests of the attending physician. The consulting physician is not allowed to take over the patient on his own. No physician is allowed to criticize or qualify in any way the medical work done by another physician in the presence of a patient.

Death of Professor Slavík

Dr. Vladimír Slavík, for many years professor of legal medicine at the Czech faculty of medicine of Prague, died at the age of 67 years. He obtained a medical degree in 1892 and immediately took up the study of legal medicine under the guidance of Professor Rumsberg, his great teacher and predecessor in the chair of legal medicine. After five years of research work, he began lecturing on legal medicine and continued his work at the Institute of Legal Medicine of Prague until he became its chief in 1908. During his twenty-five years as head of this institution, he built it up technically and scientifically. He was twice dean of the Czech faculty of medicine of Prague and in 1928-1929 served as rector of the entire university. Rumsberg can be considered the father of the Czech school of legal physicians, while Slavík was the one who translated

his theories into practical application. A treatise on sudden death as a problem of legal medicine opened his scientific career. Another large volume of his deals with the diagnosis of poisoning in the practice of legal medicine. His most popular work is a textbook on legal medicine, which became a standard reference book for medical students and lawyers. He was well known as a friend of students and for many years served as curator of the Mensa Academica in Prague. For a time he served also as a secretary of the Central Organization of Czech Physicians and as editor of the periodical *Casopis lékařů českých*.

RIO DE JANEIRO

(From Our Regular Correspondent)

Sept. 15, 1933

Criteria for the Discharge of Lepers

Dr. Nelson Souza Campos, in a communication to the Paulista Association of Medicine (*Ann. paulist. de med. e cir.* September 3) stated that the inspectors have conditionally discharged during July thirty-three leper patients as offering no more danger to the public health. It is the first time that this has happened in Brazil and the credit for it goes to São Paulo, which has the best and most complete organization to treat leprosy in this country.

The criteria for the discharge of a leprosy patient are as follows. The patient is carefully examined clinically, dermatologically and bacteriologically. He receives six months of treatment after which he is again examined. If found negative, he is classified "under observation" and, during the subsequent six months, he is subjected to a monthly bacteriologic examination, after reactivation has been brought about with potassium iodide. If still negative he is transferred to a pavilion for "closed forms of leprosy," which is at present the Sanatorium of Padre Bento, where he is subjected to treatment for six months and monthly examinations. Consequently, this represents twelve negative examinations after reactivation and after being interned eighteen months. Clinically, his active lesions must have disappeared. He is then examined by a commission of specialists and may be discharged conditionally. During the next three years he has to submit himself every three months to clinical and bacteriologic examinations, after which he is discharged permanently. A positive examination or the appearance of any active lesion annuls all the prerogatives acquired and the patient is again considered "under observation."

A Medical Congress

The Paulista Association of Medicine has decided to promote, in November, a congress for the study of questions of medical-social interest. There will not be issued any special invitations and all physicians, whether or not a member of the society, may participate if they decide to collaborate in any way in the scientific objectives of the congress. Individuals or societies should communicate with the secretary of the association for registration and payment of a special fee giving them the right to participate in the proceedings and to a copy of the proceedings. The subjects chosen for discussion are: 1. The Hospital Problem in the State of São Paulo. 2. Inflammatory Processes of Biliary Ducts. 3. Mega-Esophagus. 4. Treatment of Syphilis in Infancy. 5. Neurosurgery in São Paulo. 6. Treatment of Gonorrhea. 7. Value of Otorhinolaryngology in School Hygiene. 8. Menstrual Disturbances. 9. Lymphomatous Typhus in São Paulo. 10. Collapse Therapy of Pulmonary Tuberculosis.

The Leukocytes and the Prognosis in Appendicitis

In a communication to the Brazilian Society of Internal Medicine on the leukocytic formula in appendicitis, Dr. Moreira da Fonseca presented two leukocytic indexes that aid in the

prognosis in acute appendicitis. The author called the first index the leukoneutrophil quotient and it represents the relation between the number of leukocytes and the percentage of polymorphonuclear neutrophils. Normally it averages in this country from 100 to 150, and when it drops to from 75 to 100 it is a sign of aggravation of the disease, when it is down to from 75 to 50 it indicates gangrene or perforation of the appendix. When this quotient is below 50 the patient probably will not recover. A leukoneutrophil quotient above 250 is a sign of suppuration if at the same time there is a leukocytosis. The second index, the karyoneutrophil quotient, represents the relation between the number of nuclei in 100 polymorphonuclears and the percentage of these leukocytes. It is based on the Arneith index and on the percentage of neutrophils. In this country the number of nuclei in 100 polymorphonuclear neutrophils is usually 300 and the percentage of neutrophils varies between 55 and 65. The normal karyoneutrophil quotient is from 4 to 5. The lower the quotient, the worse the appendicitis.

A New Leprosy Society

Through the initiative of the board of directors of the Sanatorium Padre Bento and with the assistance of the auxiliary inspector of prophylaxis of leprosy of the public health service, there was established in August a Paulist Society of Leprology to encourage the study of leprosy. Various subjects were discussed pertaining to the life of the new society.

Marriages

WADE SALEEM RIZK, A Surg, Lieut (j g) U S Navy to Miss Lois Durban Greiner of Kalispell, Mont. November 3.

RALPH BERNARD MULLEN, Iowa City, to Miss Helen McCormick of New Auburn, Wis., in Chicago October 14.

GEORGE WASHINGTON HOLMES, Winston-Salem, N C to Miss Lucille Stokes Feild at Richmond, Va., September 9.

JAMES NELSON DAWSON, Lake Waccamaw, N C, to Miss Marjorie Robinette Goodwin of Wilmington, August 2.

ALEXANDER STUART MOFFITT, Murfreesboro Tenn, to Miss Virginia Billings of Nashville November 1.

LONNIE BONDURANT MOSELEY, Jackson, Miss, to Miss Frances Ransom of Aberdeen, September 5.

JOHN M McDONALD, Attica N Y to Miss Hazel Kern Huffman of Niagara Falls, November 4.

ALVIN LEROY MATHIS, Elmhurst, Ill, to Mrs. Sue Ellen Lay Baisch of Oak Park, September 14.

ALFORD GORDEY HENDRICK, Atlanta, Ga, to Miss Pauline Brown in El Paso Texas, October 14.

WILLIAM LOUIS PATMAN, Greensboro, N C, to Miss Nellie Fuller Gaskill at Greenville, October 31.

LOUIS HENRY SWITZERLITSCH, Coraopolis, Pa to Miss Pauline E Reed of Fair Oaks, recently.

JOHN KEILER MACK, St Louis to Miss Grace M Smith at Webster Groves, Mo, September 2.

HERMAN EDWIN MARTIN, Sandy Hook Ky, to Miss Amelia Duley of Morehead in September.

EMMETT AUGUST MEILI, Cochrane Wis, to Miss Cleo F Maher at Durand, September 18.

EDWIN RUSSELL JACKA to Miss Kathryn Lenore Grannis both of Pioneer, Ohio, recently.

CHARLES H NICHOLS, New York, to Miss Helen Davy of Nashotah Wis, November 1.

WALTER LEWIS NALLS to Miss Aileen Lee Williams both of Richmond, Va. October 14.

ARTHUR BURNHAM JOHNSON to Miss Betty Gruenberg both of Toledo Ohio October 7.

LINWOOD FARLEY, Courtland, Va, to Miss Evelyn Bird Nelson, September 23.

HARLEY E HENRY to Miss Ruth Conwell, both of Brownsville Pa, October 27.

Deaths

George Lyman Richards, West Dennis, Mass., Harvard University Medical School, Boston 1886, Chairman of the Section on Laryngology and Otology, American Medical Association, 1902-1903, and Delegate in 1904, member of the Rhode Island Medical Society, the American Laryngological Association, American Laryngological, Rhinological and Otological Society, American Otological Society and the New England Otological and Laryngological Society, fellow of the American College of Surgeons, member of the state board of registration in medicine, 1913-1916, at one time director of the American College for Girls in Smyrna, Turkey formerly on the staffs of the Union Hospital, Fall River, Fall River (Mass.) City Hospital and the Cape Cod Hospital, Hyannis, author of 'Nose and Throat Work for General Practitioner' on the editorial board of *Annals of Otology, Rhinology and Laryngology*, aged 70, died, November 9, of cardiac decompensation and cerebral edema.

John Ferdinand Golden, Chicago, Northwestern University Medical School, Chicago 1903, clinical professor of surgery, Lovola University School of Medicine, fellow of the American College of Surgeons, clinical assistant in surgery, Rush Medical College, 1904-1906, instructor in surgery 1906-1910 and associate in surgery, 1910-1920 at his alma mater, on the staff of the Mercy Hospital, aged 53, was killed, November 20, when he fell from an eighth story window.

William A Edwards, El Cajon Calif. University of Pennsylvania School of Medicine, Philadelphia, 1881, an Affiliate Fellow of the American Medical Association, fellow of the American College of Surgeons, formerly professor of pediatrics, University of California College of Medicine, Los Angeles, aged 73, died November 15.

Howard Rankin Weirick, Hibbing, Minn., Columbia University College of Physicians and Surgeons, New York 1896, formerly mayor, village president, health officer and member of the state board of health, on the staff of the Rood Hospital, aged 61, was accidentally shot and killed October 20, while examining a revolver.

Osee C Butler, Seminole Okla. University of Arkansas School of Medicine, Little Rock 1917, member of the Oklahoma State Medical Association, past president of the Seminole County Medical Society, served during the World War, aged 47, died, October 27, in a hospital at Oklahoma City.

Edward Parish Lacey, Bessemer Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1883, member of the Medical Association of the State of Alabama, fellow of the American College of Surgeons, on the staff of the Bessemer General Hospital, aged 77, died, October 22, of uremia.

John Thompson McLean, Captain, E O, U S Army, retired Long Beach, Calif. Memphis (Tenn.) Hospital Medical College 1898, served during the World War, aged 60, died, September 7, in the Veterans Administration Facility, San Fernando of pulmonary tuberculosis.

George Leedom Peirce, Elkins, W Va. University of Louisville (Ky.) School of Medicine 1894, member of the West Virginia State Medical Association, served during the World War on the staff of the Elkins City Hospital, aged 61, died September 26 of diphtheria.

Whiting Sweeting Worden, Yokohama, Japan, Syracuse (N Y) University College of Medicine 1886, formerly a medical missionary for many years physician to the American consulate at Yokohama and to the Japanese royal family, aged 74, died October 17.

John Francis O'Brien, Boston, Harvard University Medical School, Boston 1892, member of the New England Otological and Laryngological Society, medical superintendent of the Sanatorium Division of the Boston City Hospital, aged 66, died October 27.

Harry Wynne Browning, Little Rock, Ark. University of Arkansas School of Medicine, Little Rock 1911, member of the Arkansas Medical Society, aged 48, on the staff of St Vincent's Infirmary, where he died November 3 of heart disease and uremia.

Eugene Larkin Lawrence, Thorndale, Texas, University of Nashville (Tenn.) Medical Department 1907, served during the World War, formerly city health officer and member of the state board of health, aged 56, died September 29.

Harold MacDonald, Schenectady, N Y, Albany (N Y) Medical College 1910, member of the Medical Society of the

State of New York served during the World War, aged 48, died, November 2 of heart disease

Augustus William Foy, Denver, University of Michigan Medical School Ann Arbor, 1892 aged 74 died November 6, in the Denver General Hospital of injuries received when he was struck by an automobile

Frank Moseley, Williamson W Va University of Tennessee College of Medicine, Memphis, 1915 served during the World War, aged 48, died, October 4, in Hot Springs National Park Ark., of heart disease

Harris James Milliken, Bangor, Maine, Medical School of Maine, Portland, 1904 member of the Maine Medical Association, aged 55 died October 4, of chronic myocarditis and chronic interstitial nephritis

Alfred Guido Rudolph Castles, Los Angeles, Rush Medical College Chicago, 1871 aged 82 died August 8 in the Hollywood Hospital of cerebral embolus, abscess of the kidney and hypertrophied prostate

Henry Albert Wolff, Pasadena, Calif., College of Physicians and Surgeons, Medical Department of Columbia College New York 1877 aged 80, died, October 30, of carcinoma of the gallbladder and liver

Thomas Fillis Goodwin Mount Vernon, N Y, University of the City of New York Medical Department 1879 on the staff of the Mount Vernon Hospital aged 78, died, November 2 of angina pectoris

George C McClure, Ball Ground Ga., University of Georgia Medical Department, Augusta, 1901, aged 63, died, in October at a hospital in Canton, of an overdose of medicine, taken accidentally

Howell Venable Armistead, Newman Calif., University of California Medical Department San Francisco 1885, member of the California Medical Association aged 74, died September 12

Joseph Herman Castleman, Gladeville, Tenn., Vanderbilt University School of Medicine Nashville 1920, aged 42, died November 6, in the Martha Gaston Hospital Lebanon of pneumonia

Franklin Deo Sinclair Oswego N Y, Eclectic Medical College of the City of New York 1896, on the staff of the Oswego Hospital aged 62 died, October 29, of heart disease

Eldon E Lewis, Port Huron Mich., New York Homeopathic Medical College 1884 aged 73 died November 2 in a hospital at Detroit, of chronic myocarditis and arteriosclerosis

James Osborne De Courcy St Louis Hospital College of Medicine Louisville Ky., 1892 member of the Illinois State Medical Society aged 75, died October 26 of heart disease

Isaac J H Dunaway, Morehouse Mo Rush Medical College Chicago 1896 formerly secretary of the board of health of West Lebanon Ind aged 63, died October 16

John F McGarvey Lorain Ohio Jefferson Medical College of Philadelphia 1883 on the staff of St Joseph's Hospital aged 76 died November 6 of coronary thrombosis

Henry Curt Merten, Union City N J Medizinische Fakultät der Friedrich Wilhelms-Universität Berlin Prussia, 1887 aged 68, died suddenly October 21 of heart disease

Robert A Ferguson Bellair III, Indiana Medical College Indianapolis 1878 member of the Illinois State Medical Society Civil War veteran aged 90 died October 21

William Herschel Knap Swarthmore Pa College of Physicians and Surgeons of Chicago 1886 aged 73, died, November 7 in Upper Darby of bronchopneumonia

Fred Drew, Boston Harvard University Medical School Boston 1894 member of the Massachusetts Medical Society aged 67 died October 22 of cardiovascular disease

John Powell Hinckley, Fillmore Calif University of Vermont College of Medicine Burlington 1875 aged 79 died August 29 in Hueneme, of valvular heart disease

Mary A Hoehn Cincinnati Woman's Medical College of Cincinnati 1894 aged 78 died November 1 of cardiovascular vascular sclerosis and auricular fibrillation

John W Eckfeldt Brookline Pa University of Pennsylvania School of Medicine Philadelphia 1872 aged 82 died October 5 of chronic interstitial nephritis

John A Walker Helen W Va University of Louisville (Ky.) School of Medicine 1892 aged 63 died September 21 in a hospital at Peckley of pneumonia

Frank Bartlett Miner, Seneca Falls N Y Long Island College Hospital Brooklyn 1892 aged 69 died October 29 in Glen Falls of cerebral hemorrhage

Paul Sanford, San Jose, Calif., Kentucky School of Medicine Louisville 1891, member of the California Medical Association aged 74, died, September 29

John Bird Easterly, Istrouma, La., Kentucky School of Medicine, Louisville, 1893, aged 65 died, October 21, in the Baton Rouge (La.) General Hospital

James Robert Davis, Noble, Mo., Barnes Medical College, St Louis, 1905 member of the Missouri State Medical Association, aged 77, died September 7

James H Kennedy, Aberdeen, Md., College of Physicians and Surgeons, Baltimore, 1874, aged 85, died, October 26, of arteriosclerosis and acute prostatitis

Charles A Rife Kyger, Ohio, Starling Medical College, Columbus, 1882, aged 74 died, October 29, in the Holzer Hospital, Gallipolis, of carcinoma

William C Rebhan Springfield, Ore., Willamette University Medical Department, Salem, 1907, aged 49, died, September 19, of coronary occlusion

Anna Jeanette Erskine, Steubenville Ohio, Cleveland University of Medicine and Surgery, 1894, aged 74, died, October 31, of cerebral hemorrhage

Ralph Lee Alexander Ontario Calif University Medical College of Kansas City, Mo, 1903 aged 57, died, October 19, of a self-inflicted bullet wound

William W Hetzler, Germantown, Ohio, Medical College of Ohio, Cincinnati, 1884, aged 82, died, November 8, of cardiovascular renal disease

Thomas A Boothe, Cleveland, Texas (licensed Texas, under the Act of 1907), formerly postmaster of Cleveland, aged 76, died, October 12

Sidney Beall Clark, Long Beach, Calif., College of Physicians and Surgeons of Chicago, 1895, aged 63, died, August 25, of cerebral hemorrhage

William Henry Howitt, Toronto Ont., Canada McGill University Faculty of Medicine, Montreal, Que., 1870, aged 89 died October 20

Henry John Becker Sterling, Colo., St Louis College of Physicians and Surgeons, 1920, aged 44, died, September 26, of portal thrombosis

Addison Fordyce, San Diego, Calif., Columbia University College of Physicians and Surgeons, New York, 1924, aged 38, died August 25

Edwin A Steely, Anna, Ohio, Medical College of Ohio, Cincinnati 1873 also a druggist, aged 82, died, October 2, of enterocolitis

Oliver S Bell, Detroit Detroit College of Medicine, 1892, also a pharmacist, aged 64, died, November 7, of cardiovascular renal disease

Frank M Faries, Paris, Kv., Pulte Medical College, Cincinnati, 1885 health officer aged 72, died, November 4, of heart disease

Aloysius J McKinnon, Rio Vista Calif., University of California Medical School San Francisco 1903, aged 63, died, September 1

Louis Antonio Cribari, San Jose Calif College of Physicians and Surgeons, Los Angeles 1920 aged 41, died, August 18

George Perry Dunham, Mystic Conn Boston University School of Medicine, 1891 aged 69 died, July 5, of coronary thrombosis

William Washington Ashley, Newhall Calif., University of Missouri School of Medicine Columbia, 1875, aged 79, died, August 8

William Ernst Kramer, Milwaukee Rush Medical College, Chicago 1891 aged 69 died, October 27, of carcinoma of the rectum

Amos C Knestrick Wooster Ohio Long Island College Hospital, Brooklyn 1887 aged 82 died September 24, of senility

George H Cole Conneaut Ohio Cleveland Medical College 1892 aged 76 died suddenly November 2 of heart disease

Solon Philo Bradley Lansing Iowa Hospital College of Medicine Louisville Ky 1892 aged 68 died October 2

Simpson F Williams, Cordele Ga Physio-Medical Institute Cincinnati 1885 aged 81 died September 28

W Lowry Jeffers, Baileston Tenn (licensed in Tennessee in 1889) aged 73 died October 5 of senility

Carl Johnson Los Angeles Denver College of Medicine, 1891 aged 66 died September 14

Bureau of Investigation

THE NICHOLS SANATORIUM

Another Advertising Cancer Concern Using Escharotics

In Savannah, Mo., a small town a few miles north of St Joseph, there has been for some years an institution known as the Dr Nichols Sanatorium for Cancer. It was founded by one Perry Nichols. Perry Lewis Nichols held a diploma from the University of the South Medical Department, Sewanee, Tenn., 1901. He died in 1925.

THE JOURNAL has for years received inquiries from both physicians and laymen regarding the concern. To quote a few from the scores of inquiries received this year:

A woman in Kansas City, Mo., wrote:

I received a letter from friends in Michigan asking me to find out what I could about the Dr Nichols Cancer Sanatorium in Savannah, Mo. I called the Jackson County Medical Society and they referred me to you. Is it a reputable hospital or just a quack concern?

A physician in Seattle wrote:

'Will you please give me some information on Dr Nichols Cancer Sanatorium located in Savannah, Mo.?'

A physician in Indiana asked:

Please give me the status of the Nichols Sanatorium at Savannah, Mo.

From a town in Kansas came this inquiry:

One of my patients asked me concerning the status of the cancer hospital at Savannah, Mo. It has been my impression that this place does not rate very high.

A layman in Cincinnati wrote:

Enclosed is a letter I received from Dr Nichols Sanatorium, Savannah, Mo. Have also received the book they refer to in their letter. Upon advice of my doctor I am writing you for information as to the credibility of this sanatorium.

A Canadian physician wrote:

I have today been advised by letter that my sister-in-law living in Vancouver has left for Dr Nichols Sanatorium, Savannah, Mo., to undergo treatment for cancer of the breast. She has been advised to go there by well-meaning friends because surgery is not employed. Will you kindly advise me regarding this so-called cancer sanatorium?

The story of how Perry Nichols came to engage in the cancer-cure business when he was a young man was set forth at some length in a two-page newspaper advertisement that Nichols ran in a St Joseph, Mo., paper in December, 1924. According to the story there given, Nichols in 1895 was selling real estate in Kingsley, Iowa, a short distance from Cherokee, Iowa, where there was an advertising cancer-cure outfit operating (presumably the Seaman Cherokee Sanitarium). A niece of Nichols was working at the Cherokee institution and Nichols, when visiting the niece, met the men who were running the cancer concern. They, for some reason not clear—unless it was that Nichols was what is known as a high pressure salesman whose capacity in this field could be used—invited him to become a partner in the Cherokee institution. He accepted the offer and, with the two men connected with the Cherokee Sanatorium, opened a similar outfit in Des Moines, Iowa. According to Nichols' story, they treated one patient—unsuccessfully—and then the partnership was dissolved. This was in June, 1896.

In November, 1896, Nichols started in the "cancer cure" business on his own responsibility, although he had no medical education. He treated patients who had, or thought they had, cancer, keeping within the law by engaging a licensed practitioner to assist him. Later Nichols obtained a medical diploma from a low-grade (Class C) institution that went out of existence in 1909. He first began practicing medicine at Watertown, S. D., with cancer-curing as a side-line. Within eighteen months he moved to Sioux Falls, S. D., and later to Hot Springs in the same state where he started his first cancer cure "sanatorium." He conducted this for some years in the meantime opening a branch sanatorium at Excelsior Springs, Mo. But Excelsior Springs would have none of him and passed an ordinance that resulted in Nichols' leaving that town. He continued to operate his Hot Springs institution until 1914 when he decided that he would get a little nearer the center of population and went to Savannah, Mo.

The Nichols concern, of course, uses the escharotic treatment. According to the statement that has been made for many years,

both before Nichols died and since, this has been vaguely described as:

"... a double compound about four times the strength of chloride of zinc plaster, or the arsenical or Marsden's paste and acts with decidedly less pain."

The claim is further made that the escharotic they use "is not poisonous." This contradicts the information furnished us by the Reverend Mr. W——, a Presbyterian minister who had also been a professor of biology. This gentleman's wife was induced to go to the Nichols Sanatorium. In a letter that Mr. W—— wrote to the American Medical Association, he thus described the situation:

"I was present at the Nichols Sanatorium the day Mrs. W—— was examined. A woman nurse who is now Superintendent of the institution since Dr. Nichols died examined my wife. The examination was concluded in less than ten minutes. The nurse felt of Mrs. W——'s breast (there was no sore), also felt under her arm, and said, 'The cancer extends under arm—serious case.' Mrs. W—— was assigned a room and the next morning was put under the influence of drugs while the arsenic poison was applied to burn out the supposed cancer."

"No effort was made at Dr. Nichols Sanatorium for Cancer to find out definitely if Mrs. W—— had cancer before administering treatment of arsenic poison in poultice form."

For nearly ten days Mrs. W—— was constantly under the influence of drugs. Then hurried out of Sanatorium three weeks from the day she entered to make room for other dupes and victims of this alleged "Cancer Cure."

Since Mrs. W—— left Nichols Sanatorium she has had a nurse and doctors—several nurses and several doctors. The arsenic poison has so filled her system and destroyed her vitality that she is now dying."

Nichols' institution seems to be conducted by a woman who was associated with Nichols for many years, as "Superintendent" and "Director of Treatments." In 1932 the Nichols concern listed as its "Medical Director" and "Plastic Surgeon" W. A. Stearns, M.D., with E. S. Metheny, M.D., as "Assistant."

In 1924 a year before Nichols died, prospectuses were sent out advertising "First Mortgage Serial Coupon Gold Bonds" issued by the Dr. Nichols Sanatorium Corporation. These were to pay 7 per cent interest, payable semi-annually, and to mature in 1927, 1929 and 1931 respectively. The prospectus gave the amount of cash that Nichols had allegedly taken in annually from the time he started in 1905 up to and including 1923. In 1905 his cash receipts were \$3,300, in 1923 these had risen to \$201,600, with net profits amounting to \$71,720 after all expenses had been paid. The business has evidently been a profitable one.

The Nichols concern has for years issued elaborate and expensively prepared booklets, printed on deckle edged paper, with numerous illustrations both in color and monotone. A large part of the book lists according to states, the names and addresses of "cured patients." A few years ago the Bureau of Investigation, with the aid of the physicians of a county in Missouri, undertook to investigate all of the cases of patients whose names were given as coming from that county. Fifty-five cases were looked into. Investigation disclosed that forty-seven of the fifty-five patients were still living, eight were evidently actual cancer cases, for the patients were dead. Of the fifty-five patients, forty-three had had the diagnosis of cancer made, not by independent physicians, but by the Nichols concern itself! Three of the patients had their cases diagnosed as cancer by physicians, but no microscopic examination had been made, the diagnoses being of a clinical character only. In a few of the other cases detailed information could not be obtained.

In some of the older advertising one Jack Nichols was listed as being connected in some way with the Sanatorium. Although his picture has been published it is not at all clear just what place Jack Nichols has in the scheme of things at the Nichols Sanatorium. In July 1931, the American Medical Association received a letter reading as follows:

Gentlemen—As a member of the Dr. Nichols Sanatorium Incorporated and thru long association with this concern I have acquired a knowledge of what I believe constitutes a violation of the good practice of medicine.

If I can satisfy you as to the fact of this violation and will give you my full support, what may I expect from you by way of rectification in the same?

Sincerely yours

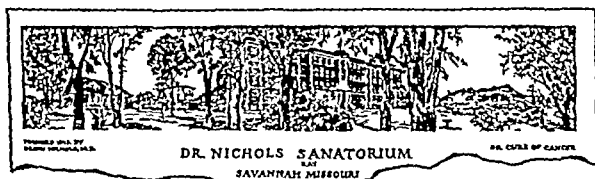
Jack Nichols

Mr Nichols' letter was answered as follows

We should say that it would not be necessary to have any long association with the concern mentioned in your letter to be convinced that there had been a violation of the good practice of medicine. We have been convinced of the same thing for very many years.

The Medicolegal Department of THE JOURNAL for October 7, this year, abstracted a legal case involving malpractice in which the Nichols Sanatorium was the defendant [*Gates v Dr Nichols' Sanatorium (Mo)*, 55 S W (2d) 424]. The plaintiff was one of the Nichols Sanatorium's victims, a woman who had gone to Savannah to be treated for two "lumps" in her right breast and one in the right axilla. A nurse diagnosed (1) her case as cancer and applied an escharotic mixture said to contain antimony and zinc chloride. As the escharotic began getting in its work, the nurse removed the necrotic tissue with surgical scissors and a curet. The entire right breast and a large part of the flesh in the axilla were thus removed before the victim left the Sanatorium. Fourteen months later she returned for treatment for another "lump" in the right axilla. The second course of treatment left her right arm useless. In the healing process the flesh united her arm to the side of her body. When she attempted to move her arm, the scars cracked and bled. She then went to a reputable physician, who performed a Wolf graft, which greatly improved her condition.

The woman sued the Nichols Sanatorium, alleging negligence and unskillfulness, and the jury returned a verdict in her favor. For some reason not clear, the judge overruled the jury's verdict and ordered a new trial, and the Kansas City court of appeals



affirmed the order of the trial court. The victim then appealed to the Supreme Court of Missouri. This, the highest court in the state in its opinion declared that there was ample testimony to support the allegations of the woman that the Nichols Sanatorium was negligent, that the Sanatorium had discharged the woman in a condition that rendered her practically an invalid for the remainder of her life, and it was a condition that could have been prevented or remedied. The Supreme Court also declared that the testimony showed that the Nichols concern used a method of treatment that has been condemned by the medical profession.

In the trial of the case in the lower court the Nichols concern undertook to introduce the testimony of one of its nurses to show that no more flesh was removed than was necessary to cure the diseased condition. The judge in the trial court ruled that while the Nichols Sanatorium might show what was done it could not introduce as evidence the opinion of the nurse, because, according to the judge that opinion was a mere conclusion and would invade the province of the jury. The Supreme Court much more rationally, took the position regarding this ruling that the nurse's testimony was properly excluded, not because it would invade the province of the jury, but because the nurse was not competent to testify. The judgment of the trial court awarding a new trial was reversed and instructions were issued to reinstate the verdict of the jury and enter judgment against the Nichols Sanatorium for the victim.

The various institutions of dubious scientific standing that advertise to cure cancer use in practically every instance, caustics or escharotics. Many persons especially those past middle age who develop benign growths assume that such growths are cancer and on their own responsibility go to these cancer-cure institutions that advertise that they do not use the knife. There the patient is told that the condition is cancerous, the growth is eaten out with caustics, the wound heals, and the patient goes back to his home a living advertisement for the cure of a cancer that never existed.

Correspondence

AMEBIC DYSENTERY

To the Editor—It is not without grim humor that California medical men join their colleagues of the Southern states in observing the dramatization by Chicago health authorities of an outbreak of amebiasis recently recognized in that city. The 1927 Chicago survey (Kaplan, Bertha, Williamson, C. D., and Geiger, J. C. Amebic Dysentery in Chicago, THE JOURNAL, March 26, 1927, p. 977) was of practical significance but the recommendations of this initial report obviously were not followed up. However, the present health authorities are to be congratulated on continuing this work and realizing its importance. Generally considered a "tropical disease," physicians in most of the United States have consistently refused to admit its potential menace as revealed by the extraordinarily high incidence of "carriers" without obvious symptoms (who have tissue damage, nevertheless) along with active cases found on systematic surveys of average populations in California and the South (Kofoid A. C. Twenty-Ninth Biennial Report, California State Bd of Health 1926, p. 93. 13.1 per cent in 6,834 persons; Kessel, J. F., and Mason, V. R., Protozoan Infection of the Human Bowel, THE JOURNAL, Jan. 4, 1930, p. 1. 9.8 per cent in 2,731 persons; Craig, C. F. The Amebiasis Problem, *ibid.*, May 7, 1932, p. 1615; Johnstone, H. G., David, N. A., and Reed, A. C. A Protozoal Survey of One Thousand Prisoners, *ibid.*, March 11, 1933, p. 728. 9.6 per cent in 1,000 persons). Current interest may focus public health attention on the problem with beneficial result, as implied by Dr. Bundesen and his associates (THE JOURNAL, November 18, pp. 1636 and 1638). Amebiasis, of course, should be reportable to health authorities.

The purpose of this communication, however, is to comment on the discussion of treatment of amebiasis as outlined in a review compiled from textbooks (THE JOURNAL, November 18, p. 1639). The review mentioned may give support to dangerous or inadequate therapy.

The only comprehensive disinterested critical survey of the treatment of amebiasis reported so far has been made cooperatively by the Pacific Institute of Tropical Medicine within the Hooper Foundation for Medical Research and the Pharmacological Laboratory of the University of California Medical School in San Francisco. The general results of this survey have been published in part (Leake, C. D. The Chemotherapy of Amebiasis, THE JOURNAL, Jan. 16, 1932, p. 195) and detailed special studies have also appeared. Referring to one of these (David, N. A., Johnstone, H. G., Reed, A. C., and Leake, C. D. The Treatment of Amebiasis with Iodochlorhydroxyquinoline [Vioform N. N. R.], THE JOURNAL, May 27, 1933, p. 1658), the review states "In their report they believe that Vioform is the most efficient drug of any type used in amebiasis." The only statement made by David et al. which could possibly be misinterpreted in such an unfortunate manner is the clearly phrased observation "In monkeys naturally infested with *Endamoeba histolytica*, iodochlorhydroxyquinoline was found to be more effective in nontoxic doses in completely and permanently clearing the stools than any mode of treatment yet reported on."

[NOTE.—This quotation is in error. THE JOURNAL quoted David, N. A., Reed, A. C., and Leake, C. D. The Treatment of Amebiasis with Iodochlorhydroxyquinoline. *J. Pharmacol. & Exper. Therap.* 48:271 (July) 1933.—ED.]

Most of the treatment discussion in the review is quoted from Dr. C. F. Craig (in *Musser's Practice of Medicine*, 1932, p. 241). The review states: "In the chronic cases Craig recommends continuous treatment with emetine bismuth iodide or chiniofon."

Continuous administration of any emetine preparation is very dangerous. Emetine and its derivatives may be lethal for mammals, including man, in a total dosage of from 10 to 25 mg per kilogram, regardless of the method of administration. Toxicity studies indicate that it is very slowly excreted or detoxified, so that cumulative poisoning may readily occur on repeated use (Anderson, H. H., and Leake, C. D. *Amer. J. Trop. Med.* 10:249 [July] 1930). Heart muscle bears the burden of the toxic effect of emetine, as shown experimentally and clinically (Rinehart, J. F., and Anderson, H. H. *Effect of Emetine on Cardiac Muscle*, *Arch. Path.* 11:546 [April] 1931). It is unfortunate that the review failed to point out the total amount of emetine that may be safely given without injury to the patient. In 1914 Vedder stated that a total of 10 grams (0.65 Gm.) should not be exceeded in the average human adult (*THE JOURNAL*, Feb. 14, 1914, p. 501). Later studies have confirmed this opinion with the recommendation that if emetine is used at all its dosage should be based on body weight and not exceed 1 mg per kilogram for a single dose or a total dosage of 10 mg per kilogram (Anderson and Leake).

Chiniofon (exploited under the trade names of "Anayodin" and "Yatren"), which is discussed in the review, is iodo-hydroxyquinoline. In the only comparative study reported on this drug, it was shown to be the least effective in comparison with ten other related halogenated oxyquinolines. Of this clinical group of drugs, iodo-chloro-hydroxyquinoline (vioform N. N. R.) was found to be best suited for clinical use. This drug, however, should not be employed rectally because of possible local irritation.

Two organic arsenical drugs are mentioned in the review, acetasone ("stovarsol") and carbarsone. The former is far more toxic in effective dosage than the latter, but this important information does not appear in the review. Toxic reactions with acetasone may be expected in about 15 per cent of patients treated at the dosage recommended, and many cases of poisoning with it have been published (Bender, W. L. *Am. J. M. Sc.* 174:819 [Dec.] 1927; Michael, J. C. *Exfoliative Dermatitis from Acetasone*, *THE JOURNAL*, Feb. 23, 1929, p. 645). Before the recent meeting of the American Society for Tropical Medicine, Anderson and Reed reported 330 cases of amebiasis treated with carbarsone, with 90 per cent success and only one mild untoward reaction in a patient with hepatitis. No other toxic effect from carbarsone has yet appeared. Chopra, Sen, and Sen of Calcutta (*Indian M. Gaz.* 68:315, 1933) have shown that carbarsone is definitely more effective in amebiasis than emetine, bismuth iodide or kurchi alkaloids. Presson (*Am. J. Trop. Med.*, to be published) has also confirmed the clinical value of carbarsone in agreement with Anderson (*Am. J. Trop. Med.* 12:459 [Nov.] 1932) and with David, Johnstone and Stanley (*Am. J. M. Sc.* 184:716 [Nov.] 1932), and also with the initial clinical report of Reed and his associates (*THE JOURNAL*, Jan. 16, 1932, p. 189). Carbarsone has an advantage in being susceptible of satisfactory rectal administration (Anderson, H. H., and Reed, A. C. *Am. J. Trop. Med.*, to be published) in acute amebic dysentery. Carbarsone is certainly a highly effective drug in amebiasis, and because of its low toxicity on repeated dosage (Dr. J. C. P. Farrington of Lincoln, Neb., used a total dosage as high as 1,200 mg per kilogram over forty-eight weeks in thirty syphilitic patients with no sign of toxicity), and also because of its definite "tonic" action, it is clearly to be recommended in chronic amebiasis except when there is demonstrable liver injury. Here arsenic is contraindicated. Emetine remains the drug of choice in amebic hepatitis or liver abscess.

Failure of recurrence of amebas in the stools of patients successfully treated with carbarsone or with vioform and maintained under proper controlled conditions eliminating danger of

reinfection has been demonstrated in a sixteen months follow up period by Reed and Johnstone (*Am. J. Trop. Med.*, to be published). Danger from reinfection is thus shown to be a more serious concern for the physician than possibility of relapse after successful treatment. Unless the patient's environment is controlled, especially with regard to food handlers in his household, reinfection is a constant menace even in the face of adequate treatment.

The review does not mention the usefulness of bismuth subcarbonate in massive doses in controlling acute amebic dysentery, as emphasized by James and Deeks (*Am. J. Trop. Med.* 5:97 [March] 1925).

The review quite properly stresses Craig's criteria of cure as based on repeated stool examination. On the other hand, it unduly emphasizes the necessity of confinement to bed during treatment. While this may be indicated in patients weakened by emetine therapy, it is not necessary in the majority of cases when less toxic and more effective agents, such as carbarsone or vioform, are employed.

Empirical clinical observation has led to the use of many different types of drugs in amebiasis. The only systematic critical study of their relative values that has yet appeared has clearly indicated that (1) kurchi and ipecac (emetine) alkaloids are unsatisfactory since the former are too inactive and the latter too dangerous in doses necessary for effectiveness, (2) among many miscellaneous astringent and antiseptic agents bismuth subcarbonate is the only one proposed that deserves attention at present, (3) much more efficient halogenated oxyquinolines are available than chiniofon ("Yatren" or "Anayodin"), vioform being proved to be so on clinical trial, and (4) much less toxic and more effective organic arsenicals are available than acetasone ("stovarsol"), notably carbarsone, which on extensive independent clinical study has been found to give more satisfactory results with less untoward reaction than any amebicide now in use.

J. C. GEIGER, M.D.,
K. F. MEYER, PH.D.,
E. L. WALKER, SC.D.,
A. C. REED, M.D.,
H. H. ANDERSON, M.D.,
C. D. LEAKE, PH.D.,
San Francisco

To the Editor—I wish to congratulate you on the excellence of the articles and the editorial on amebic dysentery that appeared in *THE JOURNAL*, November 18. Although it is regrettable that an epidemic of amebic dysentery should have started in connection with the Century of Progress Exposition, perhaps no better method of emphasizing the importance of this condition in the country as a whole could have been found. The wide publicity given to this epidemic will undoubtedly lead to the discovery of many cases of amebiasis throughout the country and a better understanding of the disease.

I think it is particularly important to emphasize, as a supplementary point in the diagnosis of amebiasis, that in addition to *Endamoeba histolytica*, man is known to harbor in his intestine at least four other amebas, none of which are pathogenic. It is just as important to be able to differentiate these amebas from *Endamoeba histolytica* as it is to be able to identify the pathogenic ameba itself. Whenever a supposedly unusual disease is called to the attention of the medical profession, many cases of other diseases are likely to be reported as the disease in question because of difficulties in diagnosis. The diagnosis of amebiasis should not be left to technicians who are not familiar with all the intestinal amebas. Authorities agree that it requires several months' training for a technician to become accurate in the identification of these parasites. One of the great needs at the present time is the better training of technicians along

this line. A good general rule for the ordinary laboratory in the identification of the motile form of *Endamoeba histolytica* is that no ameba be so identified unless it is actively motile and contains red blood cells. In the identification of cysts there is also danger of interpreting cysts of *Endolimax nana* and four-nucleate cysts of *Endamoeba coli* as *Endamoeba histolytica*. In the presence of a simple diarrhea or following the administration of a cathartic, motile amebas of any of the five human species may be found in the stools, and caution should be urged in interpreting amebas discovered under such conditions as *Endamoeba histolytica*, even by the best of technicians unless active motility and the inclusion of red blood cells verify the diagnosis, or unless they can be checked by fixed smears stained with iron hematoxylin. In a disease such as amebiasis in which a permanent cure is difficult to obtain and in which specific treatment may prove toxic to the patient, accurate diagnosis is much to be desired.

HENRY E. MELENEY, M.D., Nashville, Tenn.

To the Editor—In THE JOURNAL November 18 attention was called to the present widespread dissemination of amebiasis. These reports will unquestionably stimulate a careful search for *Endamoeba histolytica* and where it is found, call for treatment. Emetine, no doubt, will be one of the drugs used. Attention is drawn to an article I published in the *American Journal of the Medical Sciences* (129:834 [June] 1930) in which I reported a case of fatal emetine poisoning due to cumulative action. The dose had been considered considerably less than the established minimal lethal dose. The conclusions I reached after a comprehensive survey of the literature were as follows:

1. There is no established method of administration of emetine that can be accepted with impunity. The drug being a proto-plasmic poison acts on the host as well as on the parasite.

2. Conclusions drawn from laboratory animals, owing to differences of species and of individual susceptibility, cannot be applied to man to determine the minimal lethal dose of emetine.

3. The minimal lethal dose of emetine may be passed without the advent of sufficiently severe symptoms of emetine poisoning, and death may occur from cumulative action after its administration has been discontinued.

4. Individual susceptibility to emetine cannot be recognized in advance, and each patient must be considered as possibly susceptible, to prevent the occasionally fatal case of emetine poisoning.

5. Emetine in very small doses, with frequent and sufficiently long rest periods, will be amebicidal. If the infection does not clear up on this basis the amebas are of an emetine resistant strain and other forms of treatment must be devised.

6. Present knowledge of the action of emetine on the human system is but poorly understood nor is its action on amebas definitely known.

7. There is no antidote for emetine poisoning.

FRANK J. IERLEY, M.D., Seattle

To the Editor—I have read with a great deal of interest the excellent reports of the epidemic of amebic dysentery in Chicago and the reviews of the general subject published recently (November 18) in THE JOURNAL. There is one point concerning the epidemiology and control of this disease which appears to have been overlooked or inadequately understood. Because of its importance from a practical standpoint I venture to bring it to your attention in the hope that you may see fit to give it the timely publicity it deserves.

The dysentery-producing ameba has a high multiple incidence in families or household. That fact was stressed by Kotoid

in 1923 (*Univ. California Chron.* 25:302 [July] 1923) and 1923 (*Proceedings of the International Conference on Health Problems in Tropical America*, 1924, p. 322), and more recently by Meleney in 1930 (*J. Parasitology* 16:146 [March] 1930). In my report (*Am. J. Hyg.*, to be published) of an amebic survey of the residents of a small mining community in Mexico it is pointed out that a considerable proportion of the cases of amebic infection occurred in households in which from two to four members were infected.

We have under observation at present in Baltimore a family that, in March, 1932, comprised a father, mother and eight children. Both parents and seven of the eight children carried *Endamoeba histolytica*, usually in association with four other species of intestinal protozoa. In another family composed of father, mother and two sons, we have found the dysentery-producing ameba in both parents and one of the boys. The probability is as Meleney has pointed out that the infected mother who in these families is the principal food handler, is the source of the infection for other members.

The implications of high multiple household amebic incidence as they relate to the epidemic extending from Chicago are (1) that not only public food handlers should be examined but the families of positive food handlers should also be examined and if found positive, treated; and (2) that in all cases of amebiasis, the other members of the household should be promptly examined and if found positive, treated. From the standpoint of prevention of this disease, little is accomplished by the successful eradication of the parasites in individuals, either for the affected persons or for the community if the danger of reinfection from other members of the family group is not guarded against. In my opinion many of the recurrences reported following apparently adequate amebicidal treatment are due to reinfections from intrafamilial sources rather than to relapses, as is commonly inferred.

Unless attempts at amebic control focus on the family rather than on the individual much of the effort that will undoubtedly be stimulated by the recent publications in THE JOURNAL will have been in vain.

JUSTIN ANDREWS

Assistant Professor, Department of Protozoology,
Johns Hopkins University

To the Editor—In view of the widespread epidemic of amebic dysentery that seems to be imminent may I take the liberty of offering some corrections of your suggested emetine regimen in the amebic dysentery review that appeared in THE JOURNAL, November 18. Nowadays since the reporting of quite a number of cases of severe emetine poisoning the combined employment of emetine hydrochloride by injection and emetine bismuth iodide by mouth is no longer considered safe for routine therapy. Instead emetine bismuth iodide is omitted and the hydrochloride is employed about as follows: one injection daily (1 gram for the adult, $\frac{1}{2}$ gram for children of eight, $\frac{1}{4}$ gram for younger children) for six days, and then one injection of just half these doses daily for the next six days. The adult will then have received 9 grams which is close to 10 grams (0.65 Gm.) which has come to be considered the safe amount to be administered in one course. During the rest period of ten days or more other drugs may be given, then the injections may be repeated or emetine bismuth iodide (which contains 20 per cent emetine) may be given in 1 gram dose (adult) three times daily for ten days.

The warning against intramuscular injection is perhaps unfortunate since subcutaneous injection of the hydrochloride is sometimes followed by pain, discoloration of the skin and even slough. Deep injection into the gluteal region is therefore considered the method of choice though it is painful also.

I may add that many physicians with abundant experience in the disease are now preferring to use Acetarson, N N R (stovarsol), the adult dose of which is 4 grains three times daily, and emetine hydrochloride on alternate days for two weeks. One of our faculty members who was unfortunately infected in Chicago (the first one at least!) is now being satisfactorily treated in this way.

HARRY BECKMAN, M D, Milwaukee
Director, Department of Pharmacology, Marquette University School of Medicine

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TREATMENT OF RINGWORM OF THE SCALP

To the Editor—Is there any known drug capable of penetrating the hair shaft in sufficient strength to destroy the fungus in ringworm of the hairy region and is croton oil a reliable method?

H H RITTENHOUSE M D, Bridgeville Pa

ANSWER—By the criterion given, tincture of iodine should be the best remedy, for it ranks high as a fungicide and penetrates the skin better than any other drug in this class, but this argument carries little weight, for the chief benefit from these drugs seems to be the inflammatory reaction caused by them, which results in immunity to the organism. The antiseptic action of the drug is useful chiefly in preventing the spread of the infection to others, and the depth of penetration is of value chiefly because of increased irritation. For this reason it is a fact, though it seems paradoxical, that deep ringworm infections like kerion of the scalp or beard are more easily cured than the common superficial microsporon infection of the scalp in children, which remains comparatively noninflammatory.

It is assumed that the question refers to ringworm of the scalp in a child. Some cases, particularly those in infants or very young children, can be cured by the persistent use of mild remedies, such as ointment of ammoniated mercury, from 5 to 10 per cent, applied once or twice a day for several weeks. In older children, sodium thiosulphate solution 14 per cent in water, can be rubbed vigorously into the affected areas twice a day until irritation results, when soothing applications, such as 10 per cent boric petrolatum, are to be applied until the irritation subsides, and then the same treatment is repeated. If a stronger method is desired, the same thiosulphate solution may be followed by a 3 per cent solution of tartaric acid, releasing sulphur and sulphurous acid. Strong measures are to be restricted to small areas of the scalp and not used for children less than 7 years old. Tincture of iodine may be painted repeatedly on an area an inch or less in diameter until a black crust forms. This should be torn off, to carry with it many diseased hairs. A soothing preparation is then to be applied until irritation subsides. Still more reaction can be obtained by alternating tincture of iodine and ointment of ammoniated mercury, causing an active dermatitis. Many other drugs and methods of this kind were in use before the epilating power of the X-rays was discovered.

Croton oil is the most severe chemical used for this purpose. It should not be used for young children, and if used should not be applied to an area more than half an inch in diameter. It may be introduced into the hair follicles with a hypodermic needle in the smallest possible amount. Within twenty-four hours pustulation results and the hairs can be removed. Soothing ointment should then be applied. This treatment causes follicular scarring and the hair does not grow again. It should therefore be used only when the bald spot can be concealed.

A milder method of using croton oil is its application in 10 per cent strength in olive oil, rubbing it into a small area and waiting for an inflammatory reaction. This may be strong enough to cure the infection without destroying the hair. If too little irritation results from a 10 per cent solution, it may be used in greater strength.

Mechanical epilation is highly recommended by authors of the pre-roentgen era but it is tedious and a difficult job. Only a small area can be epilated at one sitting and it is sometimes impossible to remove the diseased hairs because they break

easily. Shaving or chemical epilation were also used. Epilation by X-rays is a much more satisfactory prelude to treatment, but the treatment following it must never be irritating. It is limited to the application of mild antiseptics like tincture of iodine and is stopped when the skin begins to show too much drying.

With any method, frequent scrubbing with soap and water is indicated and the hair of the whole head should be kept clipped short to allow inspection and the detection of newly infected spots. This should be kept up for several months after apparent cure of any case of ringworm of the scalp. The English dermatologist Crocker said of the treatment of ringworm of the scalp "I know of only one certain remedy, namely, persistence."

PARESTHESIAS

To the Editor—I have a patient about 40 years of age who complains of various paresthesias with a creeping sensation in the face and in the shoes, tickling sensation on top of the ear and burning in the tip of the tongue. He also has some numbness and tingling in the hands and feet slight dizziness at times and floating spots before the eyes. When he stands and looks at a still object such as a building, it appears to move slightly. He appears healthy and weighs 215 pounds (97.5 Kg). The pupils are equal and react to light and in accommodation. The eyes rotate normally. The reflexes are normal except that the knee jerk is not pronounced. The Romberg sign is negative. There is no astereognosis. Sensation is intact for cotton, pain and heat. The blood pressure is 125 systolic, 80 diastolic. The urine is negative for albumin or sugar. The red blood cells number 6,160,000, with 90 per cent hemoglobin (he had come from a high altitude). There is no history of venereal disease but the Wassermann reaction is negative to alcoholic antigen and very slightly positive to cholesteralized antigen. The Kahn reaction is negative. What suggestion do you have as to diagnosis? Could the Wassermann reaction be disregarded? Two Wassermann tests were taken six months apart with an identical reaction. Kindly omit name and address.

M D, Iowa.

ANSWER—The only objective finding recorded in this case is the alteration in the blood count. This may, as suggested, be the result of a high altitude. In view of the paresthesias, however, for which no other explanation has been found, it would be wise to bear in mind the possibility of a blood forming disorder. The very slight reaction with a cholesteralized antigen can probably be disregarded. A psychiatric examination for the possible presence of a functional disorder is also indicated. No diagnosis is possible from the facts stated.

POSTOPERATIVE CARE IN TONSILLECTOMY

To the Editor—I should like to know the best preparations to use in the tonsillar fossae following a tonsillectomy to prevent hemorrhage and inflammation. What is the best preparation to use beforehand to prevent postoperative inflammation? Please omit name. M D, Indiana

ANSWER—Tonsillectomy is an unsatisfactory operation in a number of respects. Unlike the peritoneal cavity, wherein the surgeon makes every attempt to cover raw surfaces, tonsillectomy permits a large, raw wound to heal, in the presence of the normally infected secretions of the mouth and subjected to the trauma of swallowing. Hemorrhage that occurs at the time of operation or within a few hours should be considered primary. The best protection against hemorrhage of this nature on the assumption that the patient is suffering from no blood dyscrasia, is to use the principles followed elsewhere in surgery. Every bleeding vessel, vein or artery that does not spontaneously cease bleeding after a reasonable wait and following the use of sponge pressure should be seized and ligated. Oozing that is of no significance may be stopped completely by application of a mud made by soaking tannic acid in epinephrine, 1 to 1,000. Having the patient breathe through the mouth and small pieces of ice dissolved on the tongue, coupled with small doses of morphine for sedation, are also recommended as helpful in preventing bleeding shortly after operation.

A certain amount of reaction or inflammation follows every tonsillectomy. The best safeguard against reaction and hemorrhage, incidentally, is to do the operation with as little trauma as possible. As the healing of the raw surface takes place, first of all by the formation of a slough and then of granulation tissue and ultimate epithelization, from time to time so-called secondary bleeding may occur from approximately the fifth to the fourteenth day. Most of these hemorrhages can be stopped by sponge pressure or by the application of tannic acid in epinephrine, but occasionally one or more sutures are necessary to control the bleeding. There is no known way of preventing secondary hemorrhage, apart possibly from a careful choice of the time chosen for operation, and the physician should wait from ten days to two weeks following a sore throat before

attempting removal of the tonsils. Of course the patient's general condition should be as good as it is possible to make it and for four or five days following operation there should be no marked exertion. Gargles and local applications are of little avail in the hands of most men in reducing the painful and other distressing reactions following this operation.

ERYTHROL TETRANITRATE AND POTASSIUM THIOCYANATE IN HYPERTENSION

To the Editor—I should appreciate some information on the following: 1. Are there any harmful or undesirable effects from prolonged administration of erythrol tetranitrate drug in doses of 1 grain (0.065 Gm) three times daily in case of essential hypertension? 2. What is the value if any of potassium sulphocyanate in hypertension? What is its dosage and method of administration? Please omit name.

M D Massachusetts

ANSWER—1. If the dose is chosen too high, there is a dilatation of the blood vessels of the head with a feeling of heat and discomfort, even throbbing headache. The pulse becomes softer and more rapid. There may be general irritability. Often a dose of 0.03 Gm is tolerated without distress, when the larger dose produces disagreeable side effects.

2. Potassium thiocyanate, in doses of from 0.1 to 0.3 Gm three times daily, is capable of temporarily reducing blood pressure with improvement in symptoms in possibly one third to two thirds of cases. If the blood pressure reduction is excessive, untoward symptoms may occur, such as weakness, dizziness and drowsiness, which disappear when the drug is discontinued or its dosage is reduced. There seems to be a tendency to cumulative action, which may be prevented by taking blood pressure readings every week or two and possibly by omitting the medicine one day each week. It may be administered in syrupy solution, possibly the syrup of raspberry is as good a vehicle as any.

EFFECTS OF REMOVAL OF KIDNEY

To the Editor—Will you please tell me what effect the surgical removal of one kidney has on a person? Can he buy life insurance or what is the average life of a person after removal of one kidney? Thank you for any information you may be able to give me.

M M Thompson, M D, Logan N M

ANSWER—Man can live even after all of one kidney and about half of the other have been removed or destroyed, provided the function of the remaining portion is not impaired. The removal of one kidney therefore should not of itself shorten life. The problem of expectancy of life after nephrectomy depends, of course, on the reasons for which the kidney was removed. If a tuberculous kidney has been removed but the patient's original tuberculous focus remains actively progressive, eventual involvement of the other kidney is, of course, a possibility. If the cause for which nephrectomy was done does not remain as a danger to life a patient can obtain life insurance, from companies which do not specialize in preferred risks, after a reasonable period of observation has passed to allow of studies to determine that function of the remaining kidney is adequate.

INDUSTRIAL HAZARDS ASSOCIATED WITH BIRCHWOOD

To the Editor—I have a request for information about a form of dermatitis that affects workers using birch in the wood working industry. Can you send a list of references on the subject? Since it is rather common among the wood workers in the factories of Maine it seems probable that articles and perhaps pamphlets have been written about this disease.

MARIO COBB FULLER, Maine State Library
Augusta, Maine.

ANSWER—No extensive body of published information on birchwood dermatitis is known to exist.

McCord (Industrial Hygiene for Engineers and Managers, New York, Harper & Brothers, 1931) states "In addition to mechanical irritation from the dust [birchwood saw dust], it is believed that this wood offers other opportunities for damage. The chemistry of birchwood reveals a rich content of complex carbohydrates. These polysaccharides are probably converted into simple sugars in the process of boiling birch logs. The presence of sugars on skin surfaces or in the eyes, favors bacterial growth."

In addition, it may be observed that workers with logs or in sawmills are prone to develop fungous infections of the skin and possibly of the lungs. If the logs are subjected to chemical treatment for the extraction of various tannic acids or alcohol, these extracts are to be regarded as skin irritants in some instances.

VARIATIONS IN BLOOD PRESSURE

To the Editor—In Queries and Minor Notes (THE JOURNAL July 29), under the title of 'Variations in Blood Pressure of Arms and Legs', the statement is made that no real explanation is given except that the difference in pressure is due to differences in hydrostatic pressure. While this is undoubtedly true in part for the erect subject it cannot account for the definite difference of from 10 to 40 mm of mercury in a horizontal subject. Clinical blood pressure readings made with the usual arm cuff and manometer indicate only the air pressure in the cuff when the artery is collapsed. Any increase in thickness or resistance of the structures surrounding the artery will make a higher cuff pressure necessary before the artery can be collapsed. This may easily be demonstrated by taking blood pressure readings before and after wrapping several thicknesses of towel round the upper part of the subject's arm. Is not the greater tissue resistance of the leg the chief reason for the higher readings? If this idea is tenable it raises questions of much greater clinical importance which would well bear authoritative discussion. Does the obese patient with a high blood pressure reading really have high blood pressure or is the high reading due to increased tissue resistance? Is the blood pressure really raised in subjects with vascular sclerosis and calcification or does the hardened vessel wall merely require a greater cuff pressure to produce collapse?

RICHARD B. STOUT, M D, Elkhart Ind.

ANSWER—Another explanation given for the elevated systolic pressure in the horizontal position in patients with aortic regurgitation is that the tonus of the arteries of the lower extremities is increased. This increase must be overcome before the blood enters the dependent parts and is in effect a compensatory mechanism. That such a hypertonus exists is shown by the fact that the application of heat to the leg will lead to a lowering of the systolic pressure. It has been shown that both obesity and the thickening of the blood vessel walls have a negligible effect on the actual blood pressure readings.

STERILITY

To the Editor—1. A man comes complaining of sterility. On examination of semen within fifteen minutes after ejaculation there is found an abundance of spermatozoa but there is no movement of them whatever. What is the probable cause of such an occurrence? What remedial measures would you suggest to overcome it? 2. A woman patient is anxious for conception. On examination of the husband spermatozoa are found in abundance and vigorously motile. Roentgen examination reveals the fact that both tubes in the female are patent. What would be your explanation for lack of conception and what would you suggest as an aid in this direction?

M D Montana

ANSWER—1. This may be caused by technical errors that kill the spermatozoa through overheating, chilling or exposure to some harmful chemical, by normal spermatozoa being exposed to toxic secretions from an inflamed prostate or seminal vesicles or by lack of vitality brought on by general constitutional disease, endocrine disturbances or local circulatory abnormalities such as are caused by varicocele. The treatment depends on the diagnosis and will suggest itself as soon as the diagnosis is thoroughly established, though in the nature of the case there are some conditions that are irremediable.

2. Further tests must be made to establish a diagnosis. Of these, the postcoital test is the most important. If it can be established that spermatozoa penetrate in large numbers into the fundus of the uterus and are able to live there, the diagnosis of failure of ovulation can be established. If not, there must be some abnormality of the cervical or uterine secretions, which should receive appropriate treatment. If there is failure of ovulation the basal metabolic rate should be determined and other evidences of endocrine disturbance searched for. There should also be a thorough physical examination to determine the presence of any organic disease. Finally, there seems to be with certain patients a functional sterility of psychogenic origin.

IODIDE IN CATARACT

To the Editor—What form of iodide is used in clearing progressive cataract and how should it be administered? Some publication appeared in a journal last year but I am unable to locate it.

P U DUOMO, M D, Camden Ark.

ANSWER—No form of iodine will clear a progressive cataract. Sodium iodide has been used for many years as an eye wash in 2 per cent solution and internally following the dictum of Dor of Lyons but no real results have ever been proved. Weeks of New York advocated the local use of glycerin to arrest the progress of cataract but his conclusions have not yet been corroborated by others. Some five years ago a Committee was appointed by the Section on Ophthalmology of the American Medical Association to investigate the so-called medical cures of cataract. After extensive investigation, it reported no cures.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery Jan 9 13 Sec Dr J N Baker, 519 Dexter Ave Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Oral New York Dec 15 16 Sec Dr C Cuy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B Candidates) The examinations will be held in various cities of the United States and Canada Dec 9 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Cleveland June 11 Sec Dr William H Wilder, 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Cleveland June 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

ARIZONA Phoenix Jan 23 Sec Dr J H Patterson 320 Security Bldg Phoenix

CALIFORNIA Reciprocity Los Angeles Dec 6 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver Jan 2 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

DELAWARE Wilmington Dec 12 14 Sec Dr Harold L Springer 1013 Washington St Wilmington

DISTRICT OF COLUMBIA Washington, Jan 8 9 Sec Dr W C Fowler 203 District Bldg Washington

KANSAS Topeka Dec 12 13 Sec Dr C H Ewing Larned

KENTUCKY Louisville Dec 5 7 Sec Dr A T McCormack 532 W Main St Louisville

MARYLAND Regular Baltimore Dec 12 15 Sec Dr Henry M Fitzhugh 1211 Cathedral St Baltimore Homeopathic Baltimore Dec 13 14 Sec Dr John A Evans, 612 W 40th St Baltimore

MINNESOTA Basic Science Minneapolis Jan 23 Sec Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis Regular Minneapolis Jan 16 18 Sec Dr E J Engberg 350 St Peter St St Paul

NATIONAL BOARD OF MEDICAL EXAMINERS The examinations will be held at centers in the United States where there are five or more candidates Feb 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NORTH DAKOTA Grand Forks Jan 2 Sec Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OHIO Columbus, Dec 6 8 Sec Dr H M Platter 21 W Broad St Columbus

OREGON Jan 24 Sec Dr Joseph T Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia Jan 26 Sec Mr W M Demson 400 Education Bldg Harrisburg

RHODE ISLAND Providence Jan 4 5 Dir Dr Lester A Round 319 State Office Bldg Providence

SOUTH DAKOTA Pierre Jan 16 17 Dir Dr Park B Jenkins Pierre

VIRGINIA Richmond Dec 6 8 Sec Dr J W Preston 28 1/2 Franklin Road, Roanoke

WASHINGTON Basic Science Seattle Jan 11 12 Regular Seattle Jan 15 16 Dir Mr Harry C Huse Olympia

WISCONSIN Basic Science Milwaukee Dec 16 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee Regular Madison Jan 9 12 Sec Dr Robert E Flynn 401 Main St LaCrosse

Book Notices

Combined Text Book of Obstetrics and Gynecology for Students and Medical Practitioners By J M Munro Kerr MD FRCP and S F COG Regius Professor of Midwifery Glasgow University J Haig Ferguson MD LL D FRCS Consulting Gynecologist Royal Infirmary Edinburgh James Young DSO MD FRCS Gynecologist Royal Infirmary Edinburgh and James Hendry MBE MA BSc Professor of Obstetrics and Gynecology University of Glasgow With contributions from Charles McNeill MA MD Professor of Child Life and Health University of Edinburgh and J Duncan White MB ChB DMRE Radiologist Royal Infirmary Edinburgh Second edition Cloth Price \$10 00 Pp 110 with 509 illustrations Baltimore William Wood & Company 1933

This is the type of book needed in this country for medical students. It is not quite the size of the best textbooks on obstetrics (DeLee and Williams) and yet it contains almost all the information a student need obtain from a textbook concerning both obstetrics and gynecology. It is true that there exist systems of books which combine the two subjects and that more of these systems are in process of preparation, but these are obviously not suitable for most undergraduate students. It is needless to point out that in a combined textbook of obstetrics and gynecology there is omission of needless repetition. This book written by four of the leading teachers of obstetrics and gynecology of Scotland, is an excellent one beautifully written and abundantly illustrated. The four authors divide the responsibility for the entire book, because the reader has no way of identifying the author of any particular section. There are a few points in the book with which one may take exception. The authors maintain that spinal anesthesia is valuable in certain obstetric cases especially in

cesarean section. Most authorities, even those who are enthusiastic about spinal anesthesia, recognize that pregnant women are especially susceptible to the dangers of this form of anesthesia. No mention is made of direct infiltration anesthesia which is much simpler and far safer. Many of the illustrations show the vulva unshaved, especially for the delivery of a breech presentation. In the discussion on resuscitation of the new-born, there are illustrations of Schultze's swappings. This dangerous procedure should not even be mentioned in a textbook for students or practitioners. Likewise Byrd's method should also be condemned because far better and safer means of resuscitating new-born babies are available today. In cases of transverse position of the head the authors prefer to apply one blade over the baby's face and the other over the occiput rather than resort to an oblique application. The former method of applying the blades is surely more harmful to the child. The authors condemn rupture of the membranes as a means of inducing labor, because there is often a delay in the onset of labor and consequent risk of infection. This method of inducing labor is rapidly becoming popular in the United States and, when properly performed, entails but little danger. Laminaria tents are looked on as the safest method of inducing abortion by the authors, but a dilation and curettage is simpler and not more dangerous. The authors discuss accouchement force and illustrate the Bossi dilator for this purpose but this instrument was properly discarded long ago by most obstetricians. The authors advocate the use of an intra uterine douche for the removal of debris after an abortion and for the control of postpartum hemorrhages. Intra-uterine douches are entirely unnecessary after abortions and there exist much more satisfactory quicker and less dangerous methods of checking bleeding in the third stage of labor. The authors describe and illustrate the method of elevating a retroflexed uterus by means of inserting a sound into the uterine cavity and replacing the uterus. This is a hazardous and unnecessary procedure. In spite of these minor criticisms the book will prove to be of great value, for it contains most of the recent advances in obstetrics and gynecology.

Manuel pratique de dermatologie. Le diagnostic la peau et ses réactions thérapeutiques les dermatoses. Par A Desaux et A Bouteiller Avec la collaboration de Pierre Brocq chirurgien des hôpitaux de Paris. In two volumes. Cloth. Price 260 franc. Pp 1232 with 640 illustrations. Paris: Masson & Cie 1932.

Dedicated to the memory of Louis Brocq, a master of dermatology, this work follows his teachings but also contains necessary additions to bring it down to the present. The subject matter is divided into three major parts: (1) diagnosis, (2) the skin and its reactions and therapeutics, and (3) the dermatoses. The authors propose that when confronted with a problem the student who has mastered the "dermatologic alphabet" or elementary lesions should consult the diagnostic part, where he will find the name and photograph of the dermatosis and reference to the section on 'the dermatoses' for more complete details. The illustrations, which are unusually good, bear descriptive legends, while further description and the differential diagnosis are contained in the text. In addition, many schematic drawings are reproduced to represent salient features. The illustrations are largely from the collection of Brocq supplemented by some from the museum of the Hôpital St Louis and a few other sources. As one would expect there is a full description of the ingenious diagnostic method originated by Brocq and named by him 'grattage methodique'. Appended to the diagnostic part is an excellent discussion of the dermatology of the new-born. This explains the predisposition of new-born infants to certain dermatoses on the basis of structural differences between the infantile and the adult skin. The second section, which deals with the skin and its reactions is described in the preface as 'a series of working hypotheses founded on an accepted histophysiology and biochemical basis through which the reader passes insensibly from the normal reaction to the inflammatory reactions of the integument, often prepared by modifications of the cutaneous soil'. This part of the work is also replete with illustrative schematic drawings and the remarkable clarity and systematization of the presentation stamps it as a masterpiece of dermatologic literature. The section devoted to dermatologic therapeutics includes a special article by Pierre Brocq on

surgery in dermatology Due regard is given to all accepted methods of treatment and the choice of selection of therapeutic agents according to the special character or localization of the lesion The third major division is on the dermatoses Here the teachings of Brocq are especially evident in such concepts as pruritis avec lichenification parakeratose psoriasiform, dermatites polymorphes douloureuses and dermatose figuree mediothoracique Particularly commendable are the sections on cutaneous mycoses and microbic dermatoses It is interesting to note the following dictum of Brocq, which is quoted in the dedication "Bear in mind that to be a good dermatologist it is necessary to be a visualist, a patient and discerning analyst, a prudent clinician, a finished physician" The leading feature of this excellent treatise is the emphasis on clinical diagnosis, making it one of practical value The work of the publisher is entirely satisfactory

Le rôle biologique de la catalase dans le métabolisme d'énergie Par J. H. Regenbogen médecin à Leeuwarden (Hollande) 1 paper Price 36 francs Pp 139 Haarlem de Erven F. Bohn N. V. Paris Gaston Doin & Cie 1932

In this monograph on catalase action the author reviews the earlier theories as to the action and function of catalase, also the more modern views on the liberation of energy in metabolism Each theory is discussed and its defects and values are presented The peroxidase and pH factors are treated separately in some detail, after which the author presents his own views and his own theory He points out that oxidative metabolism can be considered as a two phase process in which the anaerobic and aerobic phases proceed independently but rhythmically The rhythm is controlled in the main by the pH of the fluids at the surfaces of cells and by the effects of pH changes in the activation and inactivation of the enzymes involved in these processes The local pH changes the author considers to be automatically controlled by insulin through its control of fatty acid metabolism However, the pH factor alone is not sufficient for the complete control of the rhythm in the two phases Another factor enters and that is the formation and action of catalase The function of the catalase is to aid in making the separation of the two phases absolute and to protect the cell from self combustion in the aerobic phase through its destructive action of the hydrogen dioxide formed and bound by peroxides However, it does not destroy the minute traces of free hydrogen dioxide found in cells, which are so necessary for the destruction of cellular toxins and for the liberation of molecular oxygen for cell respiration The author emphasizes the need of an exact understanding of catalase action and function in connection with diabetes, arthritis, gout, obesity, arteriosclerosis malignant tumors, and many skin diseases

Physical Chemistry of Living Tissues and Life Processes as Studied by Artificial Imitation of Their Single Phases By H. Beutner M.D. Ph.D., Professor of Pharmacology School of Medicine University of Louisville Cloth Price \$5 Pp 337 with 79 illustrations Baltimore Williams & Wilkins Company 1933

This is a systematic presentation of old and new observations on the physical and general physiologic aspects of the structure and activities of living forms The argument is that life is a scientific problem This argument is approached in three ways First much use is made of exceedingly simple models which in some degree simulate certain macroscopic features and behaviors of a few living forms The action of salts in the swelling of colloids in the transport of water and in osmotic changes is presented in simple language in connection with such models with the view of showing that similar mechanisms are at work in the living tissues In the second approach an attempt is made to study the microscopic structure of a number of Butschli's and Iedus's models which show striking resemblance to certain living structures In this connection the author also presents his view that the crystallization of a pure substance involve internal structural and external surface forces that are similar to those involved in the growth of a cell or tissue The third approach involves a more detailed consideration of bio-electrical phenomena The author states that the production of bio-electricity primarily appears to be a characteristic of living matter just like color density viscosity and other physical qualities He considers the nature of the electric potential observed in living forms and emphasizes the impor-

tance of the heterogeneous composition of protoplasm and the differential action of solvents, solutes, phase boundaries and membranes in its control Naturally, the laws of electrical stimulation, the nature of polarization, the travel of waves of polarization and their physical causes are considered Other interesting material is given in later sections of the book, such as a brief treatment of artificial parthenogenesis and a fair review of Gurwitsch's observations on mitogenetic rays The appendix is devoted to a more mathematical treatment of investigations on membrane equilibrium and its bearing on water exchange swelling and osmotic pressure The author closes his arguments with a plea for the synthetic method of approach by means of artificial models, in spite of his admission that the difficulties involved in constructing one of the most elementary forms of life are practically insurmountable The work presents a good summary of the more obvious physical aspects of general physiology, with possibly a tendency to make the problem seem less simple than it really is from a purely chemical point of view One is struck by the tendency to ignore the importance of specific tissue constituents and of specific tissue activities in the normal physiologic history of a cell or tissue

Urographic Urology By Stanley R. Woodruff M.D. F.A.C.S. Associate Professor of Urology Columbia University and New York Post Graduate Medical School and Hospital Cloth Price \$15 Pp 253 with illustrations New York Wainlich Printing Company Inc 1931

This presentation is essentially clinical No attempt is made to go into the details of histology and pathology When laboratory details are of interest they are mentioned The subject matter is excellently arranged The illustrations are unusually clear and sharply defined and the various lesions are generously illustrated The monograph serves as an excellent everyday working aid not only to the urologist but also to the roentgenologist to the surgeon and to the internist, who so often are confronted with borderline problems in differential diagnosis The author is to be complimented particularly on his discussion of each case under the heading of urologic impressions The appearance of the urograms and the clinical history together make for simplicity in reference by the busy practitioner

The Diagnosis and Treatment of Diabetes and the Use of High Carbohydrate Diets By W. Wilson Ingram M.C. M.D. Honorary Physician and Physician in Charge of the Clinic for Diabetes Mellitus Royal North Shore Hospital Sydney and G. V. Rudd M.Sc. Research Biochemist Institute of Medical Research Royal North Shore Hospital Sydney With preface by C. G. Lambie M.C. M.D. FRCP Bosch Professor of Medicine University of Sydney Cloth Pp 88 with illustrations Sydney Australia Angus & Robertson Ltd 1933

This gives the shortest and simplest possible exposition of the diagnosis and treatment of diabetes mellitus Although it is intended primarily for the physician the almost complete absence of technical terms and the elementary nature of the theoretical references make the volume suitable for the well informed layman The book is particularly designed to meet the conditions of medical practice in Australia, and the dietary instructions are based on the energy requirements and food materials indigenous to that continent The diets advised by the authors are presented in a series of weighed daily diets of ascending caloric value in which the food materials may be varied by the use of substitution tables All diets are moderately high in carbohydrate, the fatty acid dextrose ratio being 0.75:1 throughout As in all similar dietary systems flexibility for individual requirements is sacrificed to simplicity

A Laboratory Manual of Neuro Anatomy By C. L. Davis M.D. Professor of Anatomy University of Maryland and H. S. Rubinstein B.S. M.D. Instructor in Neuro Anatomy and Assistant in Medicine University of Maryland Part II Stereographic Plates Boards Price \$3.30 plates Baltimore William Wood & Company 1933

It is difficult to review the second part of a work of which the first part has not yet been published The material at hand consists of a series of thirty stereoscopic photographs illustrating the gross structure of the brain They are well chosen and accompanied by excellent descriptive sketches They will be useful to students and teachers of psychology who have need of rudimentary information concerning the structure of the brain but cannot supplant an actual dissection as an introduction to the study of the brain in medical schools

Miscellany

MATERNAL MORTALITY

Abstract of the Report on "Maternal Mortality in New York City," 1930, 1931, 1932, Issued by the Committee on Maternal Mortality of the New York Academy of Medicine

In 1930 the New York Academy of Medicine organized a committee of physicians to study maternal mortality in New York City. The work of the committee was conducted with the aid of a grant from the Commonwealth Fund.

In the three years embraced by the study, 2,041 maternal deaths occurred in New York City. Of this number the committee estimates that 1,343, or 65.8 per cent, would have been preventable "if the care of the woman had been proper in all respects." By a careful review of every death that occurred the committee established to the extent possible the factor or factors that were responsible for the fatality.

Responsibility for the occurrence of the 1,343 deaths which the committee adjudged preventable was distributed among physicians, patients and midwives. To the medical group 61.1 per cent of the preventable deaths are charged. The patient is held responsible for 36.7 per cent of the deaths, and the midwife for 2.2 per cent of the total of these deaths.

These figures, startling as they are, do not however, in the judgment of the committee give a reasonable picture of the problem. Hence the report of the committee devotes much attention to the various factors affecting puerperal mortality, such as the widespread use of anesthetics, the decline in spontaneous deliveries, the greater frequency with which operative measures are employed cesarean sections, hospital and home deliveries, prenatal care, economic status, and a score of other important items.

"Sixty per cent of all deaths," the committee state in its report, "which could have been avoided have been brought about by some incapacity in the attendant: lack of judgment, lack of skill, or careless inattention to the demands of the case. Some of these situations have arisen out of the fact that interns have been given too wide a field of independent activity. Most are plainly the results of incompetence. Prevention in this field will mean increasing the respect of the physician for the gravity of obstetrical operations and educating him to greater caution in attacking problems which are properly the field only of the highly trained obstetrician."

ANESTHESIA

In the detailed study of the factors that influence maternal mortality, the committee finds that the use of anesthesia during labor and delivery has grown steadily in extent since its introduction in the last century and is a problem of the most pressing importance, more so in the United States than in any other country. This has come about to a large extent through pressure from the lay public. The women of the large urban centers have become steadily more insistent in their demands for shorter and less painful parturition, and the accoucheur may disregard these demands only at great risk to his own practice.

"The wide effects of the increased use of anesthesia can only be guessed at, but the direct effect of the administration of the anesthetic in its tendency to lessen and enfeeble the expulsive powers of the uterine musculature must be reflected in an increased necessity for artificial assistance at delivery. The frequent use of instrumentation is based upon the easy accessibility of anesthesia. It is the opinion of many observers that the increase in the use of anesthesia is a factor in keeping the maternal mortality rate stationary."

OPERATIVE DELIVERY

The committee finds that a prominent feature of the development of modern obstetric practice has been a steady increase in the proportion of operative deliveries. According to authori-

tative estimates, not more than 5 per cent of all delivery cases require operative intervention. A study of the records of sixty-seven hospitals in which almost 75 per cent of all hospital deliveries occur shows that operative intervention is practiced in 24.3 per cent. In the city as a whole it is estimated that one out of every five deliveries is an operative delivery. In comparing the maternal deaths in operative deliveries and those in which the delivery was spontaneous, the committee found that the maternal mortality was five times as high among the operative deliveries as among the spontaneous ones.

In commenting on this finding, the committee states: "That the increase in the use of instrumentation brings with it an increased hazard is evident if the relative rates for spontaneous and operative delivery are examined. We cannot disregard the enormous difference between them. The death rate for spontaneous deliveries is less than one-fifth that for the operative. Clearly this represents a serious defect in the management of these cases."

"It is not contended that the rates can be made equal. The necessity for operative interference arises, at times, out of serious abnormalities or disturbances of the mechanism of labor, which, in themselves, greatly increase the hazards. But any such disparity as that shown in these figures is a certain indictment of those undertaking the interference."

The committee believes that "a reduction of the mortality rate can be achieved through a reduction in operative interference."

"Increasing demand on the part of the patient for shorter and less painful parturition (delivery), the greatly increased use of anesthesia, the spread of the knowledge of surgical techniques, and the pressure of time upon the attendant," the committee believes, "is responsible for the increase in operative deliveries."

CESAREAN SECTION

While all surgical maneuvers have increased in obstetrics, the incidence of cesarean sections has increased notably. In 1910 in one of the large New York hospitals, only 2 in 1,000 deliveries were made by cesarean section. In 1927 the number increased to 25.

The committee finds that the incidence of cesarean sections in the hospitals of the city is high. While 2.2 per cent of all deliveries were made by cesarean section, this operation was responsible for almost one-fifth of all the deaths.

HOSPITAL AND HOME DELIVERIES

A little less than 30 per cent of all deliveries studied during the three year period took place in the home. During the same period but 14.5 per cent of the 1,343 preventable deaths followed delivery in the home. The relative death rate per thousand live births for hospital and home deliveries is therefore 4.5 per thousand live births in the hospital and 1.9 per thousand live births in the home. The maternal mortality rate for home deliveries is therefore substantially less than half of that in the hospital deliveries. However in evaluating these figures it should be remembered that only those deliveries which are unassociated with serious abnormalities are usually undertaken in the home. When the labor becomes unduly prolonged or serious accidents occur in its course or the prognosis is unfavorable, the case is either referred to or transferred to the hospital. The record of hospital deliveries is therefore deeply affected by the selected nature of the cases in which delivery occurs at home.

In reviewing the matter, however, the committee observes that "the great increase in the hospitalization of the normal parturient has failed to bring the hoped-for reduction in puerperal morbidity and mortality, and thus in spite of great advances in our knowledge of the processes involved and the proper way of treating them. It would seem that the present attitude toward home confinement requires re-examination, and a program looking toward an increase in the practice of domiciliary obstetrics deserves careful investigation."

ECONOMIC STATUS AND MATERNAL MORTALITY

The economic status of the prospective mother, the committee's studies reveal, appreciably affects her well being and the safety with which she may expect to pass through the birth experience. In making a detailed study of 341,879 births that occurred in the three year period under consideration, and divid-

ing the mothers into four groups designated respectively A, B, C and D. A representing the slum population, B the depressed economic artisan class, C the so-called white collar group and D the group most favorably situated economically, it was found that their comparative maternal mortality based on figures (which excluded the deaths following abortion and ectopic pregnancies) were as follows: 49 deaths per thousand live births for the slum population, 42 in the artisan group, 46 in the white collar class, and 39 in those most favorably situated economically. The difference between the extremes, group A and group D, is therefore 20 per cent.

MIDWIFE PRACTICE

While approximately 10 to 12 per cent of the births in New York City and throughout the country occurred under the supervision of midwives, the committee finds that provision for the proper education, registration and supervision of midwives is exceedingly inadequate in most states in the Union. Two schools for midwives are in operation in New York City. However, the committee found that "a large number of the practicing midwives in New York City are foreign-born women who were trained in the country of their birth and came to this country and began the practice of midwifery before the present laws regarding licensure were put into effect." New York City has at the present time 863 licensed midwives. These attend approximately 10 per cent of the annual births.

The committee interviewed fifty-nine midwives who had either delivered or been in contact with a patient whose case ended fatally. Of the fifty-nine midwives interviewed, nineteen were adjudged by the committee to be competent, twenty were thought to be only fairly competent and twenty were incompetent. When judged on the basis of their obstetric results, the record of midwifery deliveries compared to deliveries by physicians, the committee found "that there is no great disparity between the results of the work done by the two groups."

In reviewing the problem of midwifery which in the United States has been regarded until recently as a necessary evil to be done away with as soon as possible, the committee states that "contrary to the generally accepted opinion, the midwife is an acceptable attendant for properly selected cases of labor and delivery. There has never been a contention that she has any place except for the normal delivery at home, but we have seen that her results are as good as those obtained by the physician under what are justly regarded as comparable circumstances and for comparable cases."

"Of the midwives seen and interviewed it is significant and must be borne in mind that less than a third were judged to be competent and in the face of incompetence or only fair training and ability the results were by no means prejudicial to the midwife."

Proper training is the first requisite and there is an increasing tendency among part of the medical profession to see that it is provided. After proper training there must be suitable, adequate and cooperative supervision and control of that practice.

The midwife should have a position in the scheme for providing maternity care. It remains for the medical profession to define what that position should be. She is able to supply attendance and nursing care for a smaller compensation than the costly training of a physician requires, but the necessity for every woman to have adequate care during pregnancy and at delivery, and to have the services of a physician if and when those services are needed, must be kept in mind.

It is necessary first of all to provide midwives who are properly trained. It would not seem absolutely necessary that a nurse's training be a prerequisite to training as a midwife, but in order to extend the practice of employing midwives as accoucheuses in normal parturition a different type of woman must be brought into the field. The present type of non-nurse midwife would prove wholly unacceptable to certain classes of the community. While the only slightly educated woman with adequate training may be a capable midwife, the more educated patient will demand a different type of attendant. The two groups need not be mutually exclusive. There should be opportunities for both to receive the necessary training.

The midwife should be encouraged and if necessary required to return for short courses at certain intervals. Her training

must prepare her to understand the mechanisms of normal labor and delivery. She must be able to detect the signs of the abnormalities of pregnancy, and she must be able to measure the pelvis accurately. She must be thoroughly familiar with a simple method for maintaining asepsis. Finally, she must be equipped to give suitable care to both mother and infant during the puerperium.

The medical profession must accept the midwife as one of its adjuncts. Physicians must make themselves responsible for her proper training and supervision as such. They must regard her as an ally in the effort to reduce the morbidity and mortality associated with childbearing. Both officially and privately there must be an alteration in the prevailing attitudes toward her. There must be a readiness to cooperate with her to insure the results both physician and midwife are anxious to achieve."

CONCLUSIONS AND RECOMMENDATIONS

The committee ends its report with a number of concrete recommendations.

"To improve this situation and remove the causes out of which it arises it is evident that there must be a determined effort to educate both the lay public and the medical profession to an understanding of the necessity for change in certain of the methods now employed. The profession itself must accept the responsibility for educating the lay public to a better understanding of the aims of obstetrics and the methods by which those aims may be realized. But prior to that must come increased education of the profession, that it in turn may wisely inform the lay public."

First, a prospective mother must have further instruction in the necessity for prenatal care. She must be taught that prenatal care does not mean merely registering for confinement, that it is imperative to obtain that care as early as pregnancy is suspected, that one visit at which no abnormalities were discovered is no guaranty of continuing good health but that regular return for observation is vital if her attendant is to be enabled to give her the best possible care, that previous normal pregnancies and deliveries do not assure subsequent normal ones, that proper and sufficient prenatal care offers her the greatest assurance of an uneventful confinement.

Furthermore, some information must be made available to the patient as to the standards of such prenatal care. She should have some knowledge of the purposes of such care and what she may expect from her attendant as the minimum requirements of a proper prenatal supervision. She should know that the omission of urinalysis, blood pressure determination, or the measurement of her pelvis constitutes negligence, that a thorough physical examination is a necessary part of proper care. She must be informed of the possible gravity of symptoms that seem to her mild, and the fact that early treatment is the prerequisite to the prevention of later trouble.

"The medical profession is obligated to inform the lay public that operative delivery undertaken merely to alleviate pain or shorten labor involves increased risk for both mother and baby."

"The relative safety of delivery at home should be emphasized. Effort should be made to induce women who cannot obtain adequate medical or hospital care to avail themselves of the services of qualified midwives under the supervision of physicians."

"To accomplish this education the medical profession must assume a role which heretofore has been left to lay organizations. Confidence of the lay public in the medical profession will enable this to be done with greater authority and increased chances of success."

To do this well the outstanding members of the profession in every community must actively interest themselves in the process. Obstetrical societies would do well to use the channels of the press and radio to broaden the sphere of their activities in this line. They would further increase their educational function by issuing authoritative pamphlets from time to time. They must assume responsibility for the teaching given through social service and lay organizations.

Hospitals in order to qualify for recognition by the controlling authorities must have qualified obstetricians as directors or their staffs. The hospital must maintain a special

clinic for prenatal care, in charge of a member of the visiting obstetrical staff. There must be a sufficient number of beds set aside for the hospitalization of clinic patients with complications. There must be a social service department adequate, as to training and personnel, to keep in touch with all patients, to insure early registration and regular attendance, to facilitate the patients' cooperation through home adjustments, to assist in the educational function of the hospital to the community.

All hospitals must maintain separate delivery rooms where only obstetrical cases are treated. The rules for the maintenance of asepsis must be rigid including masking, the importance of which deserves reemphasis. Labor rooms must be sufficient to insure their availability to all patients. Isolation must conform to the most stringent regulations and include proper technique on the part of the nursing staff. All nursing must be done by properly supervised nurses, who should be especially trained in obstetrical nursing. The resident staffs must be under supervision at all times. There must be an invariable rule requiring the responsible attending physician to see patients promptly and supervise directly the residents who are assigned to them. Furthermore, the less experienced members of the staff must be under supervision of the responsible heads.

"Proprietary hospitals should be brought under the supervision of a responsible board of hospital control and unless they provide adequate facilities as described above except for prenatal care and social service, they should not be permitted to accept obstetrical patients.

"The situation in regard to midwives must be altered. More schools are needed for their training, including both women who have had previous training as nurses and those who have not, effort should be made to enroll types of women who would be acceptable to groups of the population now unwilling to employ a midwife, and the nurse wife is suitable for this purpose. Licensure should be based upon examination. Additional short courses, at stated intervals, should be compulsory. Supervision should be increased, and changed to include actual oversight of cases under care. With physicians in charge appropriately trained nurse-midwives might make suitable supervisors. Midwives should be required to report births within forty-eight hours, to report immediately any abnormality during labor, and to call consultation if labor continues beyond a definite time limit. The physician must be prepared to give the midwife unqualified cooperation. Some hospitals might well make use of midwives to conduct the deliveries in their outpatient service, under the direction of the inpatient obstetrical department.

"The hazards of childbirth in New York City are greater than they need be. Responsibility for reducing them rests with the medical profession."

Medicolegal

Malpractice Failure to Remove Sponge After Tonsillectomy—The defendant a physician, removed the plaintiff's tonsils, Oct 18 1927, under a general anesthetic. After the operation, the plaintiff had a severe cough, pain in the left chest peculiar expectoration, and fever. About Jan 1, 1928 the plaintiff consulted another physician, who found a lung abscess. Among other efforts to be cured the plaintiff went to a clinic in Philadelphia where, by successive operations a hole was burned with a cautery through the pleura and into the lower lobe of the lung to drain the abscess. Feb 2, 1930 during a lung hemorrhage, the plaintiff coughed up a batting sponge. Attributing the presence of the sponge to the defendant's negligence, the plaintiff sued. The trial court directed a verdict for the defendant, and the plaintiff appealed to the Supreme Court of Michigan. The defendant-physician testified that gauze sponges were used by him during the tonsillectomy; the plaintiff's testimony was to the effect that they were of batting. In the operation in Philadelphia, said the court gauze was used and if any batting was used in the treatment to swab the wound, it would normally be discharged by way of the wound and would not be coughed up. In removing tonsils there is danger of foreign and infected matter getting into air

passages of the lungs, especially by gasping and heavy breathing of the patient, and a natural result thereof is lung abscess. On the question of whether the verdict was properly directed against the plaintiff, said the Supreme Court the evidence must be viewed in the light most favorable to her. The record shows that the plaintiff coughed from the lung a batting sponge. How did it get into the lung? There was evidence negating its getting there during the operation in Philadelphia, and, continued the court, the jury would be justified in so finding from the record. Furthermore, the jury might find the remaining opportunity to be in the operation done by the defendant. Such a finding might have support in the element of time, for the lung abscess a natural result of the entry of the foreign matter into the lung, followed the operation performed by the defendant. If this be the finding said the court then this is not a case where losing the sponge was observed and prompt and proper effort made to remove it, but a case where the sponge was lost unobserved and negligently, and the case stands on a par as regards negligence with those cases where sponges have been left in incisions. The rule said the court in such cases is stated in 21 R C L 388.

Probably the most common instance of malpractice which is brought into the courts arises out of surgical cases where the physician or attendant has left a sponge in the wound after the incision has been closed. That this is plainly negligence there is no doubt at all, and it matters not at all that many physicians testify that the best of surgeons sometimes leave a sponge or some other foreign substance in the bodies of their patients for this is testimony merely to the effect that almost every one is at times negligent. Whether the particular act was negligent is for the jury to decide after considering the circumstances of the case.

The question of negligence, therefore was held by the Supreme Court to be for the jury and the trial court erred in entering a directed verdict for the defendant. The case was remanded for a new trial—*McKinstry v Matthees* (Mich), 247 N W 75.

Evidence When Opinion of Expert Witness Invades Province of Jury—An expert witness may express an opinion as to whether or not a physician has been guilty of malpractice by commission or omission. On the ultimate issue of whether a patient's condition resulted solely from malpractice however an expert witness invades the province of the jury when he goes beyond stating that the condition *could*, and in saying that it *did* so result. Such an opinion is but the private judgment of the witness and is not competent evidence. Whether the alleged malpractice could cause the result complained of is a question of science only. Whether the malpractice did occasion such result usually a matter of controversy, is not a question of mere science. When a result could have been occasioned by one of two or more causes, the ultimate fact of which cause occasioned the result is for the determination of the jury. A medical expert may not in case of conflicting evidence invade the province of the jury and testify that the result was in fact occasioned by one cause only—*De Groot v Winter* (Mich) 247 N W 69.

"Imbecility of Mind" Defined—The term 'imbecility of mind' says the Court of Appeals of Kentucky, is not susceptible of exact or comprehensive definition. It is generally applied to indicate a mental condition between feeble-mindedness and idiocy. Mental imbecility consists of the absence of or change in the faculty of reasoning and discerning, which renders a person incapable of taking care of himself and administering his affairs—*Douning v Siddens* (Ky) 57 S W (2d) 1.

Society Proceedings

COMING MEETINGS

- Medical and Surgical Association of the Southwest El Paso Texas Dec 79 Dr W Warner Watkins Box 1587 Phoenix Ariz Secretary
- Philippine Islands Medical Association Manila Dec 12 15 Dr Antonio S Fernando 817 Taft Avenue Manila Secretary
- Society for the Study of Asthma and Allied Conditions New York Dec 9 Dr W C Spain 116 East 53d Street New York Secretary
- Southern Surgical Association Hot Springs Va Dec 12 14 Dr Robert L Payne 142 York Street Norfolk Va Secretary
- Western Surgical Association Cincinnati Dec 89 Dr Frank R Teachener 306 East 12th Street Kansas City Mo Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics and Gynecology, St Louis

26 147-310 (Aug) 1933

- Observations on Endocrine Diagnosis and Treatment of Amenorrhea and Functional Uterine Bleeding. B. M. Anspach and J. Hoffman. Philadelphia—p. 147.
- Five Year Study of Abortion. R. E. Watkins. Portland Ore—p. 161.
- Hemimetra Cervicis with Especial Reference to Pelvic Endometriosis. R. A. Livendahl. Chicago—p. 173.
- *Nephritis in Pregnancy. H. J. Stander. New York—p. 183.
- *Value of Aschheim-Zondek Reaction in Diagnosis and Prognosis of Chorionepithelioma. C. Mazer and I. Edeiken. Philadelphia—p. 193.
- Incidence and Significance of False Positive Pregnancy Reactions. A. J. Zisman. Philadelphia—p. 204.
- Results of Intra Uterine Cultures Obtained with Sheath Tube. J. K. Jaffe. Philadelphia—p. 212.
- *Influence of Female Sex Hormone on Blood Coagulation of the New Born. J. C. Hirst. Philadelphia—p. 217.
- Importance of Pulse Rate in Labor. B. G. Hamilton. Kansas City Mo—p. 224.
- Röntgen Differentiation of Types of Intestinal Vaginal Fistula. Harriet C. McIntosh. New York—p. 231.
- Benign Uterine Hemorrhage Treated with Radiation Therapy. Review of One Hundred and Forty Seven Cases. S. Rubinfeld and R. J. Maggio. New York—p. 237.
- Weight Changes in the Last Four Months of Pregnancy. Study Based on Six Hundred and Sixty Three Cases of Normal Pregnancy and Pregnancy Complicated by Toxemia. R. S. Siddall and H. C. Mack. Detroit—p. 244.
- Acute Inversion of the Uterus. Report of Four Cases. G. H. Davis. Brooklyn—p. 249.
- Urinary Suppression and Uremia Following Transfusion of Blood. R. A. Johnson and J. F. Conway. Boston—p. 255.
- Direct Intra Abdominal Radiation in Advanced Pelvic Carcinoma. E. A. Schumann. Philadelphia—p. 260.
- Unusually Large Ovarian Cyst. G. Gibson. Brooklyn—p. 264.
- Torsion of the Normal Fallopian Tube. F. B. Block and M. A. Michael. Philadelphia—p. 268.
- Abruptio Placentae (Complete) with Spontaneous Partial Rupture of the Uterus. S. L. Siegler. Brooklyn—p. 270.
- Rupture of Uterus Following Previous Cesarean Section. Report of Three Cases. J. Casagrande. Brooklyn—p. 273.
- Rupture of Uterine Scar and Urinary Bladder Following Cesarean Section. I. Wilens. New York—p. 274.
- Teratocormus Cyllosoma. T. M. Boulware and C. B. Flinn. Birmingham Ala—p. 276.
- Vaginal Retractor for Operations on Cervix. J. S. Diasio. New York—p. 278.

Nephritis in Pregnancy.—From a follow-up study of a large series of pregnant patients in whom the diagnosis of nephritis was established Stander concludes that the prognosis is grave, the average maternal mortality occurring within ten years being approximately 40 per cent. It is his belief that the strain of the pregnancy on the function of the kidneys greatly aggravates an underlying chronic nephritis and thereby materially shortens the life of the patient. To help in the early recognition of nephritis he advocates the employment of the urea clearance and fifteen minute phenolsulphonphthalein tests. The creatinine excretion test may also be employed although it perhaps measures the tubular instead of the glomerular function. In addition to these tests the patient's past history, the duration of pregnancy, the behavior of the blood pressure, albuminuria and edema under hospitalization with proper dietary measures, the examination of the electrocardiogram, the cardiovascular system and blood and urine chemistry are all aids in establishing a correct diagnosis. The best treatment for chronic nephritis in a pregnant woman is the termination of the pregnancy and the prevention of any further pregnancy.

Aschheim-Zondek Reaction in Chorionepithelioma.—Mazer and Edeiken point out that abnormal uterine bleeding following a normal or a mole pregnancy should not be treated by radium because it masks the local symptoms of chorionepithelioma. It is imperative to make an early diagnosis of

chorionepithelioma by means of uterine curettage. The authors present two cases of chorionepithelioma which show by contrast the value of the Aschheim-Zondek reaction in the diagnosis and the prognosis of the disease. The source of the hormone prolactin, responsible for the Aschheim-Zondek reaction is living chorionic epithelium, which should not persist longer than two weeks after the termination of a normal pregnancy or eight weeks after expulsion or operative removal of a mole pregnancy. The quantity of prolactin excreted is proportional to the amount of abnormal chorionic epithelium present, hence a gradual increase in prolactin excretion accompanying abnormal uterine bleeding following the termination of a normal or a mole pregnancy is indicative of a proliferative process, chorionepithelioma. Persistence of the Aschheim-Zondek reaction after extirpation of the uterus for chorionepithelioma points to metastasis, which should be located and treated by means of intensive irradiation. Prolactin is probably a placental hormone and exerts its influence on the ovaries through the medium of the anterior pituitary lobe. The degree of ovarian response in chorionepithelioma is variable, depending on intrinsic ovarian conditions and the responsiveness of the anterior hypophysis to prolactin stimulation.

Female Sex Hormone and Blood Coagulation of the New-Born.—Hirst proposes to show the effect of certain standardized preparations of estrin on normal new-born infants and on several abnormal infants, including one case of moderate hemophilia. The study of each group consisted mainly in noting the duration of bleeding without pressure from heel punctures, and the time required for coagulation of blood drawn into uniform machine-made capillary tubes. He found that the normal coagulation and bleeding times of both male and female new-born infants are nearly constant between three and a half and four minutes for the first eleven days. The injection of solution of crystallized estrin (theelin) produced a moderate reduction of the blood curves in normal male and female infants. Injections of progesteron were followed by a definite increase of the bleeding and coagulation times in normal new-born infants of both sexes. Abnormally long coagulation and bleeding times, as well as spontaneous bleeding other than vaginal, were corrected by injections of theelin. Breast engorgement in both sexes was produced by injections of female sex hormone indicating a direct effect of estrin on the breasts of new-born infants rather than an indirect result through the activation of a preputary specific hormone. Vaginal (uterine) bleeding was initiated by estrin administration. Icterus neonatorum appeared to clear up more rapidly than usual, under injections of theelin. The author is ascertaining whether icterus may be prevented by the early administration of estrin.

Intra-Abdominal Radiation in Advanced Carcinoma.—Schumann outlines a procedure designed to further the attack on advanced pelvic carcinoma by applying roentgen rays directly to the affected tissues without the intervention of the abdominal parietes. The patient under tribrom ethanol anesthesia is placed in the lithotomy position, biopsy is performed, the nature and extent of the carcinomatous infiltration are determined by bimanual examination and 50 mg of radium is applied to the cervix or to the uterine cavity with such filtration as is deemed appropriate for the individual case. Then in the Trendelenburg position the abdomen is prepared for laparotomy, a median incision from 6 to 8 inches in length is made and the abdominal walls are widely separated by means of a Balfour retractor. The intestine is carefully walled off with a large gauze pad after which the abdominal wall and all the pelvic tissues except those involved in the malignant growth are protected from irradiation by being covered with sheet lead 2 mm in thickness. Strips of lead are cut to fit the interior of the abdomen and are then snugly molded into position with the fingers so as to isolate the tumor area; all other tissues are covered by strips of lead. A large sterile dressing is then applied and the patient is given a full therapeutic dose of roentgen radiation, i. e. 1.0 milliamperes at a distance of 18 inches 150 kilovolts, 6 mm of aluminum filtration. On the completion of the treatment the sterile dressing is replaced, the lead and gauze packs are removed and the incision is closed. No attempt is made to remove any of the malignant tissues. The author has performed this operation on three women without any postoperative complication or any particular discomfort to the patients.

Archives of Internal Medicine, Chicago

52 165 340 (Aug) 1933

Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris III Early Results in Various Types of Cardiovascular Disease and Coincident Pathologic States Without Clinical or Pathologic Evidence of Thyroid Toxicity H L Blumgart J E F Riseman D Davis and D D Berlin Boston—p 165

Clinical Studies of Respiration II Influence of Determination of Basal Metabolism on Respiratory Movements in Man and Effect of These Alterations on Calculated Basal Metabolic Rate J A Greene Iowa City, and H C Coggeshall Indianapolis—p 226

*Benign and Malignant Neutropenia Present Status of Knowledge of This Condition with Report of Four Cases Regena C Beck Richmond Va—p 239

Cholesterol and Lecithin Phosphorus in the Plasma of Anemia Other Than Pernicious Anemia Influence of Therapeutic Measures on These Constituents Gullt Lindh Muller and C W Heath Boston—p 288

Effect on Reflexes of Carotid Sinus of Raising Intracranial Pressure C M Guernsey S A Weissman and F H Scott Minneapolis—p 306

*Absorption of Dextrose by Rectum W S Collens and L C Boas Brooklyn—p 317

*Pleurisy in Rheumatic Fever Clinical Observations W K Myers and E B Ferris Jr Boston—p 325

Benign and Malignant Neutropenia—Beck reports four cases two of primary malignant neutropenia as described by Schultz, one of primary subchronic recurring benign neutropenia, and one that began as a fulminating case, with recovery and three months later recurred as a primary subchronic benign neutropenia. These patients did not give a history of exposure to any of the physical or chemical agents known to produce benign or malignant neutropenia, nor did they give a history of any previous infection that might have had a bearing on the disease. The clinical picture at the inception of the illness was the same for all four patients, in the patient with the typical subchronic recurring benign neutropenia, the onset was more gradual. These cases suggest that there is a fundamental difference in the pathologic changes underlying the recovered and the fatal cases. In the fatal cases, the maturation of granulocytes had ceased and the granulopoietic tissues were exhausted. A maturation factor for granulocytes has not yet been discovered, so that a specific treatment could not be applied. In the recovered cases maturation was arrested and the granulopoietic tissues were not exhausted the fault seeming to be in the lack of a chemotactic factor to call the granulocytes to the circulating blood. In one of the two cases of primary malignant neutropenia, the roentgen rays in some unknown way stimulated this function to normal. Dorn's theory is that the roentgen rays bring about a destruction of some of the intact myeloid foci with a liberation of autogenous nucleotides, which then initiate the maturation and delivery of granulocytes from the remaining myeloid foci. In the patient with the typical subchronic recurring benign neutropenia, which was more mild, this function righted itself in time to prevent irreparable damage.

Absorption of Dextrose by Rectum—In determining whether or not dextrose can be absorbed by the rectum, Collens and Boas observed that in the nondiabetic group there is a rise in the blood sugar ranging between 16 and 25 per cent and that the amount of dextrose recovered at the end of the experiment varies between 10 and 27 per cent at the end of two hours. This indicates that as much as 90 per cent of the dextrose administered by rectum was absorbed. In the diabetic group much the same picture prevails except for the fact that two patients showed no rise in the blood sugar, and one even experienced a 20 per cent decrease. The other four diabetic patients had elevations in the blood sugar of 9, 21, 38 and 50 per cent. All, however, showed evidence of absorption by the analysis of the rectal return. In the patient in whom there was a decrease in the blood sugar, only 14 per cent of the amount administered could be recovered at the end of two hours. The authors present further evidence that dextrose is absorbed in significant quantities by the fact that a diabetic patient, who had recently experienced an attack of hypoglycemia as the result of an overdosage of insulin, was immediately relieved by the administration of 25 Gm of dextrose by rectum. The authors' series consisted of twenty-four nondiabetic patients, eleven of whom received 250 cc of a 10 per cent solution of dextrose (25 Gm), seven 250 cc of a 25 per cent solution of dextrose (50 Gm), five, 400 cc of a 5 per cent solution (20 Gm) and one, 200 cc of a 50 per cent solution (100 Gm). Two of the diabetic

patients received 250 cc of a 10 per cent solution of dextrose, two, 200 cc of a 25 per cent solution (50 Gm), and three, 400 cc of a 5 per cent solution. At the end of two hours the patients were given an enema with 500 cc of tap water, and the evacuation was collected. These returns were analyzed for the dextrose content by the Benedict quantitative method for estimation of sugar in the urine.

Pleurisy in Rheumatic Fever—Myers and Ferris observed fifteen patients suffering from rheumatic fever with pleural lesions. Thirteen had rheumatic pleurisy, three, fibrinous pleurisy, and ten, pleurisy with effusion. Two patients had bilateral hydrothorax due to myocardial failure during the acute stages of rheumatic fever. Involvement of the pleura was characterized by the sudden onset and by dyspnea, orthopnea, mild cyanosis pain (depending on the nature of the pleural lesion) and a febrile response varying in severity and duration. Evidence pointed to concurrent pulmonary lesions in the patients who had true rheumatic pleurisy. The pleural lesions were found to be independent of pericarditis and were related to underlying pulmonary processes. The hemorrhagic nature and the redness with which clot formation took place characterized the fluid of rheumatic pleurisy. Polyarthritides preceded by involvement of the pleura and lung in two instances. Salicylates did not alter the course of the pleural and pulmonary lesions and, indeed, failed to relieve completely the articular symptoms in the presence of an extension of the rheumatic process to the pleura and lung.

Archives of Ophthalmology, Chicago

10 161 292 (Aug) 1933

*Specific Treatment of Ophthalmic Tuberculosis with a New Tuberculosis Vaccine AO B Nakamura Osaka Japan—p 161
Selected Cases Showing Advantages of a Combined Tangent Screen and Perimeter C E Ferree G Rand and L L Sloan Baltimore—p 166

Sympathetic Scleritis B Samuel's New York—p 185

*Removal of Lid with Plastic Repair W L Hughes Hempstead N Y—p 198

Roentgen Therapy of Pituitary Tumors Report of Twenty Cases. C C Hare and C G Dyke New York—p 202

New Test for Visual Acuity F H Verhoeff Boston—p 226

Respective Values of Various Forms of Treatment of Certain Diseases of the Cornea G H Burnham Toronto Canada—p 231

*Protein Extract of Vitreous Humor (Bovine) Preliminary Report. C Hobart St Louis—p 237

Ophthalmic Tuberculosis—Since 1926 Nakamura, in the treatment of ophthalmic tuberculosis, used AO, a tuberculosis vaccine discovered by Arima and Aoyama. He states that 1 cc of AO number 1, i e, the smallest dose for adults, administered once a week, nearly always brought about a subsidence of the disease without any noxious result. He believes that ophthalmologists should extend the method of using the optimal dose not only in the treatment of phlyctenae but also in all tuberculous diseases of the eye. He points out that AO has proved to be the best remedy in all forms of ophthalmic tuberculosis as compared with other tuberculins. Of the 503 cases in which accurate observations were made, the conditions subsided in 89.5 per cent, and in 10.5 per cent the conditions remained unchanged. These diseases were tuberculous, were suspected of being tuberculous, were not certain etiologically or defied antisyphilitic treatment. The author concludes that the great advantage of AO is that, used in nonincreasing doses as he has advocated, it never creates unfavorable results.

Removal of Lid—Hughes removed a tumor that had invaded the inner two thirds of the lower lid with the diathermy cutting current, making the section in the normal tissue. The tumor was thus removed in its entirety without being cut and without the use of forceps. The margin of the free end of the lower lid was denuded for about one eighth inch (0.3 cm) and a similar portion of the margin of the upper lid was denuded. A double armed suture was passed through a rubber pig and through both lids, and this was passed through a second pig and tied stretching the remaining lateral third of the lower lid. This covered almost all the lower part of the cornea, keeping the remnant of the lower lid from contraction and preserving its normal shape. An adhesion was thus formed between the upper and lower lids at the point of denudation. At the same time a pocket was made in the upper lid preparatory to the insertion of a piece of mucous membrane from the mouth. A piece of mucous membrane was then removed from the inside of the

cheek and attached to a small metal form with its smooth surface toward the form, later this formed the conjunctiva of the new lower lid. A perforated piece of cellulose acetate to which a small amount of sterile petrolatum was applied was placed directly over the lids and the denuded surface inferiorly. A pressure dressing of gauze fluffs was then applied and left in place for one week. At the first dressing the rubber pigs and the suture were removed, and the pressure dressing was reapplied to remain for five days more. A light dressing, changed every three days, was kept on until three weeks after the operation. The granulation tissue was removed to form a clean bed to receive the graft from the upper lid. The skin of the upper lid, including the part lined by mucous membrane, was then removed. The mucous membrane edge was sutured to the conjunctiva and the edges of the skin were approximated by fine interrupted black silk sutures (number 00 special ligature braided silk). A pressure dressing consisting of perforated silkoid moistened with petrolatum was applied directly over the eyelids and graft. The gauze fluffs were held in place with adhesive tape and then pressed firmly down by means of a tight bandage and adhesive tape. A week later a similar dressing was applied for another five days. After that a light dressing was applied until, at the end of three weeks dressings were dispensed with. The intermarginal adhesion was left intact for six weeks, which allowed full contracture to take place before it was cut. When it was cut, the intermarginal adhesion on the lower lid assumed a relatively normal position.

Protein Extract of Vitreous Humor—Hobart states that his clinical observations and tests prove that certain persons are hypersensitive to vitreous humor protein and that in such persons a characteristic inflammatory reaction results when a loss of vitreous occurs through injury or operation. Persons with cataracts or any injury of the globe should have an intradermal test with vitreous protein before operation. Persons who are hypersensitive should be desensitized. Following extraction of a cataract with loss of vitreous but with retention of the cortex, a person may be hypersensitive to both proteins. A person hypersensitive to the vitreous protein of the ox or of the pig is also hypersensitive to the protein of his own vitreous. It is possible to sensitize an animal to its own vitreous protein. Regardless of the amount of vitreous lost, some persons have a severe reaction, others a mild and still others no inflammatory reaction. The author hesitates to recommend or suggest the dosage for purposes of desensitization. It will vary according to the patient. It is best to begin with about 1 cc and gradually to increase the dose to 2 cc. In order to determine whether the patient is desensitized, an intradermal test should be performed.

Colorado Medicine, Denver

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- The Medical and Surgical History of the Appendix Vermiformis W. W. Grant, Denver—p. 280
Surgery of the Upper Abdomen L. V. Sams, Denver—p. 287
Some Clinical Aspects of Tumors of the Breast Ella Mead Greeley—p. 289
Association of Eczema with Alteration in Gastric Secretions O. S. Philpott, Denver—p. 295
Pneumoperitoneum in Treatment of Tuberculous Peritonitis O. M. Gilbert, Boulder—p. 296

Florida Medical Association Journal, Jacksonville

20 45 58 (Aug.) 1933

- Lymphopathia Venerea A. Brown, Jacksonville—p. 53
Appendicitis, Inertia in Mortality Rate and Its Influencing Factor H. F. White, St. Augustine—p. 5
Some Disturbances of Thyroid Gland H. West DeLand—p. 62
Luxury in Infants and Children J. R. Boulware, Jr., Lakeland—p. 66
New Method of Treating Fractures of the Lower Extremity L. H. Oetjen, Leesburg—p. 69

Fractures of Lower Extremity—Oetjen describes his well leg traction method for treating fractures of the leg. The first cast to be applied is on the well leg and is applied in the usual manner, extending from the mid thigh to several inches beyond the toes. The foot should be placed at right angles to the leg and should be held in slight eversion and care should be taken that the plantar surface of the cast is firmly reinforced so as to support the weight of the lower traction. The ankle of the fractured leg is then prepared in the usual manner. The site of election for the insertion of the Steinman pin is at a point two to three breadths above the lateral malleolus. The

skin and periosteum on each side is infiltrated with a 2 per cent solution of procaine hydrochloride and the pin is inserted without any drilling or preliminary skin incision. Sterile sponges are then placed next to the skin over the ends of the pin. The leg is wrapped with cotton batting and the plaster cast is applied, including the toes and several inches beyond. The traction stirrup is placed over the ends of the pin and the stirrup incorporated in the cast with plaster bandage. After the plaster has firmly set the splint is bolted together and the traction nut screwed down and correct alignment of the fragments is obtained by either internal or external rotation of the fractured leg. In general the author's time for the removal of the pin is: fractures of the pelvis, from four to six weeks, fractures of the neck of the femur, from twelve to fourteen weeks, intertrochanteric fractures, from seven to nine weeks, subtrochanteric fractures, from seven to ten weeks, fractures of the femoral shaft from five to ten weeks, fractures of the distal third from five to ten weeks, fractures of the tibia, from four to twelve weeks, and operative cases, from six to eighteen weeks.

Journal of Bacteriology, Baltimore

26 139 228 (Aug.) 1933

- Influence of Foodstuffs on Respiratory Metabolism and Growth of Human Tubercle Bacilli R. O. Loebel, E. Shorr and H. B. Richardson with technical assistance of Muriel Harris, New York—p. 139
Influence of Adverse Conditions on Respiratory Metabolism and Growth of Human Tubercle Bacilli R. O. Loebel, E. Shorr and H. B. Richardson with technical assistance of Muriel Harris, New York—p. 167
Nature of Effect of Carbon Dioxide Under Pressure on Bacteria J. S. Swearingen and I. M. Lewis, Austin, Texas—p. 201
Gram Reaction and Electric Charge of Bacteria V. Burke and F. O. Gibson, Pullman, Wash.—p. 211
Studies on Solubility of Pneumococcus in Saponin II Sensitization by Ergosterol S. J. Klein, New York—p. 215
Systematic Relationships of Actinobacillus L. Thompson, Rochester, Minn.—p. 221

Journal of Pediatrics, St. Louis

3 265 406 (Aug.) 1933

- Ray Shadows in Growing Bones Produced by Lead Their Characteristics Cause Anatomic Counterpart in the Bone and Differentiation E. A. Park, D. Jackson, T. C. Goodwin and L. Kajdi, Baltimore—p. 265
Alimentary Intoxication in Infants Acid Base Equilibrium with the Use of Continuous Intravenous Therapy (Preliminary Report) H. Cohen, P. R. Miller and B. Kramer, Brooklyn—p. 299
Dilatation and Hypertrophy of the Heart in Infancy Due to Parenchymatous Myocarditis F. E. Kenny and S. Sanes, Buffalo—p. 321
Present Status of Serum Treatment in Acute Poliomyelitis C. Wesselhoft, Boston—p. 330
Pseudohypertrophic Muscular Dystrophy Preliminary Report on Treatment of Three Cases with Glycine H. B. Mettel and A. K. Slocum, Indianapolis—p. 352
Epilepsy Value of Encephalography in Selection of Patients for Treatment by Ketogenic Diet R. C. Eley, Boston—p. 359
Blood Picture in Early Stages of Pertussis Vera B. Dolgopol, New York—p. 367

Alimentary Intoxication in Infants—Cohen and his associates treated nine cases of alimentary intoxication with the continuous intravenous drip and starvation in an attempt to correct dehydration to reestablish diuresis and to restore the chemical equilibrium of the blood serum. They found the administration of dextrose and saline solution by continuous intravenous drip to be a reasonably safe procedure. Dehydration is rapidly corrected and diuresis reestablished. Adjustment of inorganic equilibrium of the blood may require several days. Clinical improvement usually precedes chemical readjustment. Diarrheal acidosis in their cases was due either to a relative or an absolute increase in the chloride or to a decrease in fixed base in agreement with previous observation. Increase of non-protein nitrogen disappeared promptly with the reestablishment of diuresis. The authors draw no final conclusions as to the therapeutic value of this method of administration because of an insufficient number of cases. The amount of fluid required to overcome dehydration would seem to be less than when other channels of administration are used. There is real danger of producing edema because of rapid blood dilution.

Pseudohypertrophic Muscular Dystrophy—Mettel and Slocum confirm the work of Vilhorat Technor and Thomas who have shown that patients presenting pseudohypertrophic muscular dystrophy show a creatinuria even when maintained on a creatine free diet. The normal subject excretes ingested

creatinine almost quantitatively (from 65 to 100 per cent). The inability to retain ingested creatinine is said to be in proportion to the severity of the disease. The authors present the case histories of three patients suffering from pseudohypertrophic muscular dystrophy who were treated with glycine. An earlier report showed that the daily ingestion of 5 Gm. of glycine was followed by a definite rise in the creatinuria. The daily administration of from 15 to 20 Gm. of glycine increased the daily excretion of creatinine to from 300 to 500 mg. After a period of some weeks (depending on how advanced was the case), the creatinuria begins to decrease despite the continuance of glycine until it falls to the former control level. Coincident with the increase in creatinuria there is an improvement in the patient's ability to hold ingested creatinine. These changes in the metabolism disappear in the course of a few weeks after the cessation of glycine ingestion and return if the administration is again instituted. The first symptoms of improvement are manifested by a curious feeling in the muscles which the patients described as a crawling, rumbling sensation. Following this there is a disappearance of the sensation of fatigue. Gradually the function of the involved group of muscles is so improved that activity can be performed which had been impossible before the administration of this drug. Two of the patients so treated showed improvement, the other one showed slight improvement.

Journal of Urology, Baltimore

30 153-270 (Aug.) 1933

- Tuberculous Nephritis and Tuberculous Bacilluria. Study of One Thousand Operated Cases of Renal Tuberculosis. Pathology and Bacteriology. J. J. Berthel, Chicago and T. Huth, Budapest, Hungary.—p. 153.
- Mechanism of Perinephric and Perinephritic Abscesses. Clinical and Pathologic Study. V. Vermooten, New Haven, Conn.—p. 181.
- Routine Cultures of Urine for Tubercle Bacilli. J. R. Seidman, Baltimore.—p. 193.
- Perforation of Urinary Bladder by Pelvic Abscess. Report of Two Cases. D. P. Lagerstrom, San Jose, Calif.—p. 207.
- Study of Response of Trigon and Detrusor Musculature to Vesical Neck Obstructions. M. Muschat, Philadelphia.—p. 221.
- Direct Internal Ultraviolet Radiation to Entire Genito-Urinary System. S. Lubash, New York.—p. 231.
- Papillary Carcinoma of Bladder and Horseshoe Kidney Occurring Simultaneously in the Same Individual. F. Floyd and J. L. Pittman, Atlanta, Ga.—p. 239.
- Caudal Anesthesia in Children. M. F. Campbell, New York.—p. 245.
- *Sodium Citrate Solution for Preventing Formation of Blood Clots in the Bladder. A. M. McLellan, New York.—p. 251.
- Transurethral Removal of Prostatic Stones with Simultaneous Revision of Prostate. Report of Case. L. L. Michel, New York.—p. 253.
- Calcified Cyst of Spermatic Cord. Case Report. G. C. Burr, Detroit.—p. 259.
- *Diphtheritic Urethritis. N. E. Berry, Kingston, Ont., Canada.—p. 263.

Cultures of Urine for Tubercle Bacilli.—Seidman took cultures of eighty-nine tuberculous specimens from forty-five patients, eighty-one of which were either bladder or kidney urine. Tubercle bacilli were isolated from sixty, or 67.4 per cent, of the specimens and from thirty-nine, or 86.6 per cent, of the patients. In fourteen of the positive cultures, no acid fast bacilli had been seen in the direct smear of the concentrated sediment. From fourteen specimens, in which acid fast bacilli had been seen in the direct smear, no growth was obtained. In fifteen specimens, in which both culture and direct smear were negative the inoculated guinea-pigs developed tuberculosis. Growth of tubercle bacilli was obtained on Corper's crystal violet potato cylinder from 54 per cent of the positive sediments on Petroff's conglutinated egg medium (without gentian violet) from 69.1 per cent and on Sweany's milk meat infusion egg and cream medium from 71.6 per cent. Oxalic acid 5 per cent, and sodium hydroxide, 3 per cent, proved better as digestants than a 6 per cent solution of sulphuric acid, both in the percentage of isolations and in the average time required for the appearance of growth. All three reagents were equally efficient in destroying secondary contaminants. The shortest interval for the primary isolation of tubercle bacilli by culture was sixteen days. Growth was obtained within three weeks in 18.3 per cent of the positive specimens, on 7 per cent of the inoculated culture tubes. For the reasons discussed, guinea-pig inoculation still appears to be superior to cultures for the diagnosis of tuberculosis in suspected cases. No avian strains of tubercle bacilli were recovered. Strains from eighteen cases were of the human type, and the remainder showed the growth characters of the mammalian organisms.

Prevention of Blood Clots in Bladder.—During 1932 in the course of investigations directed toward satisfactory suture of the bladder neck during suprapubic prostatectomy, McLellan felt that the problem could be greatly simplified by the use of some solution that would prevent the formation of blood clots in the bladder. Sodium citrate solution immediately suggested itself. Since that time the author has used the 3 per cent solution of sodium citrate as a routine in forty-three operations for enlargement of the prostate, viz., twenty suprapubic prostatectomies with closure of the bladder neck, nineteen resections of the prostate under vision, and four Calk's cautery punch operations. During prostatectomy the solution is injected into the bladder as soon as the bladder neck has been sutured. Approximately 25 cc. is left in the bladder until the suprapubic wound has been properly closed, then this solution is washed out and replaced by about 25 cc. more and the tube clamped while the patient is taken to his bed for permanent drainage under low decompression. If the outflow is bloody, the citrate solution may be changed again several times during the first few hours. The author states that the use of this solution has completely eliminated the formation of clots and the plugging of the catheter by such clots in every instance. All clots must be removed from the bladder before the citrate solution is injected, as it may not disorganize rapidly any clots that are already formed.

Diphtheritic Urethritis.—Berry reports a case of diphtheritic urethritis in a man aged 45, who complained of frequent painful urination with two attacks of retention. The condition had been present for about three weeks and just prior to its onset he had had a left ureteral colic and passed a calculus the size of a shriveled grain of wheat. Hot sitz baths and sedatives were prescribed and the patient was instructed to return in a week. He returned in five days with a temperature of 101 F. and a pulse of 100. There was marked edema of the penis, which was red and painful. The membrane appeared exactly as before. Bacteriologic investigation finally revealed a true diphtheria bacillus. Antitoxin was administered 15,000 units during the first week and 5,000 each for two following weeks. The membrane, which had been densely adherent for nearly a month, began to loosen the morning after the first injection and came away in large pieces in the urine. In three days the normal urethral mucosa could be seen shining through and pieces of membrane could be picked off with forceps though it was still adherent and left a bleeding surface. In ten days the urethra was clear of membrane though the mucosa was inflamed and remained so for weeks. The areas of induration about the urethra eventually went on to suppuration and required incision. They finally healed completely. One year from the original onset of his illness he returned with a condition similar to that of the previous year. Culture showed the same organism as before. Antitoxin was again administered in doses of 5,000 units with out benefit and the dosage was increased to 15,000 units, but still the disease progressed. The meatus became widely eroded and the membrane extended to the frenum which was destroyed. A large periurethral abscess again formed at the penoscrotal junction, it opened widely and through it the greater part of the urine found exit. In view of the fact that cultures had always shown the same diphtheria-like organisms, 40,000 units of antitoxin was administered. The patient had a chill and a marked febrile reaction with immediate improvement in his condition. The antitoxin was repeated at intervals of five days for three weeks and he now appeared well. All the areas of ulceration were healed though the periurethral fistula was still discharging. After the second dose of antitoxin a cystoscope was passed in order to dilate the urethra and to ascertain the extent of the involvement. This showed the condition to be limited to the anterior urethra, the posterior urethra and the bladder were entirely normal and the urine from each ureter was sterile. The author concluded from microscopic and cultural studies that the organism was a diphtheria bacillus although the negative virulence tests as well as the sugar reactions pointed toward an organism of the Xerosis group. The organism described in Sewell's case of chronic cavernitis resembled this organism in some respects but differed in that it was actively pathogenic for mice.

New England Journal of Medicine, Boston

209 219 266 (Aug 3) 1933

- Obstruction of Lower End of Ureter Following Certain Bladder Operations A L Chute Boston —p 219
Pneumococcus Lobar Pneumonia D O Hara Boston —p 222
A Room Sized Respirator P Drinker and J L Wilson Boston —p 227
Urinary Tract Complications from Uterine Cancer F H Colby Boston —p 231
Erythema Nodosum Like Lesions in Chronic Ulcerative Colitis Report of Case P A Brooke Worcester Mass —p 233
Primary Torsion of the Great Omentum L Allen Burlington Vt —p 235
Ulceration of Duodenum from Actinomycotic Infection L Rabinowitz Waltham, Mass —p 236
Menstrual Pain Among Industrial Women Mary R Lakeman Boston —p 237
Physical Diagnosis Prior to Auerbruger R W Buck Boston —p 239
Insulin Therapy in Postpellagrous Trophic Ulcers Elizabeth Ann Sullivan, Cambridge Mass —p 241
Brodie's Abscess of a Spinous Process H R Wheat and L E Hathaway Jr Springfield Mass —p 243
Subcutaneous Emphysema Complicating Parturition Report of Case J A Maroney Worcester Mass —p 245

209 267 318 (Aug 10) 1933

- Circulatory Disturbances of Extremities Medical Aspects Soma Weiss, Boston —p 267
Scarlet Fever Outbreak Due to Raw Milk R F Feemster and J M Kingston Boston —p 275
Industrial Poisons Alice Hamilton Boston —p 279
Benign and Malignant Tumors of the Lung Bronchi and Mediastinum D S King Boston —p 282

Insulin in Postpellagrous Trophic Ulcers—Sullivan reports a case in which trophic ulcers occurred following pellagra, and insulin was given to improve nutrition and thereby to hasten the reparative processes in the trophic ulcers. The trophic ulcers were the last manifestation of a fulminating pellagra of a duration of four months and appeared after the subsidence of severe cutaneous gastro-intestinal and neurologic symptoms. The pellagra had been treated by a diet rich in vitamin G and by local and general therapy for lesions and symptoms. Three months after the onset of the pellagra and after the disappearance of the pathognomonic signs the first group of bilateral, symmetrical trophic ulcers appeared on the feet. This first set of ulcers which healed in eight weeks was treated in addition to the dietary measures, by protective and antipruritic ointments and other medicaments. Two weeks later a second set of symmetrical lesions more severe and diffuse appeared on new sites on the feet and lower parts of the lower extremities. Notwithstanding energetic dietary and local treatment for six weeks this second set of ulcers enlarged the feet became indurated and inflamed and the patient steadily lost appetite and weight. Insulin was then started and in two weeks the induration of the feet had gone and the ulcers healed. The appetite returned the weight increased and the paresthesias of the toes disappeared.

Northwest Medicine, Seattle

72 311 356 (Aug) 1933

- Acute Infective Osteomyelitis A T Bazin Montreal Que —p 311
Grading of Malignancies D L Martin Tacoma Wash —p 316
Malignant Disease of Esophagus Study of One Thousand Cases I P Vin on Rochester Minn —p 320
Cancer of the Stomach I I Else and O Schneider Portland Ore —p 323
Cancer of Colon and Rectum Its Diagnosis and Treatment T E Jones Cleveland —p 326
Agranulocytic Angina A Pitfall in Its Recognition and Comments in Recent Advances in Its Treatment E S Du Bray San Francisco —p 331
Treatment of Agranulocytic Angina with Nucleotide K 96 F Brugman and E J Lewis Seattle —p 336
Neurophysiology Applied to Urology F J Clancy Seattle —p 338
Congenital Deformities and Anomalies H A Dowd Salem Ore —p 343
Hemorrhagic Encephalitis Arterial I C Strohm Portland Ore —p 347

Oklahoma State Medical Assn Journal, Muskogee

20 273 314 (Aug) 1933

- Diagnosis of Diabetes Mellitus Significance of Glucosuria G L Driver Ponca City —p 273
Diabetes Mellitus I A Riew Oklahoma City —p 279
Diabetes Mellitus and Its Relation to Vascular Disease H A Rutledge Tulsa —p 284
Diabetes Mellitus and Its Surgical Uses Fannie S Harris Birmingham Ala —p 287

Pennsylvania Medical Journal, Harrisburg

26 815 894 (Aug) 1933

- Progress in Prostatic Surgery J F McCarthy New York —p 815
Purulent Conjunctivitis in Infants Caused by an Atypical Staphylococcus J S Plumer, Pittsburgh —p 821
Results in Surgical Treatment of Pulmonary Tuberculosis C H Marcy and H R Decker Pittsburgh —p 824
Therapeutic Treatment of Neurosyphilis S B Haddon and C Wilson Philadelphia —p 829
Treatment of Congenital Syphilis C S Wright Philadelphia —p 832
Aplastic Anemia Paralytic Anemia Regenerative Anemia Myelophthisis W M Bortz Greensburg —p 834
Blood Stream Infection Delaying Healing in Simple Fracture F S Mainzer Clearfield —p 838
Tumor of the Kidney T C Stellwagen Philadelphia —p 839
Idiopathic Roentgen Diagnosis of Tumor of the Kidney G W Grier Pittsburg —p 842
An Unusual Renal Anomaly P P Mayock Wilkes Barre —p 844

Southern Medical Journal, Birmingham, Ala

26 665 752 (Aug) 1933

- Clinical Pathologic Conference I Case of Severe Anemia with Cardiac Manifestations, II Case of Obscure Infection L Hamman Baltimore —p 665
Operation for Late Reduction of Semilunar Bone E D McBride Oklahoma City —p 672
Denervation of Ureter Clinical Study L R Wharton Baltimore —p 677
Pulmonary Abscess in Children D T Smith and A McBryde Durham N C —p 686
Plasma Cell Myelomas Causing Cord Compression Report of Five Cases R M Klemme St Louis —p 692
Asthmatic Bronchitis Treatment with Iodized Oil (Lipiodol) J F Allison Selma Ala —p 696
Studies on Metabolism and Results of Treatment in Various Forms of Arthritis L Martin Baltimore —p 699
Endemic Nutritional Edema in Tennessee Public Health Problem J B Youmans Nashville Tenn —p 713
Peptic Ulcer in the Southeast Clinical Study of One Hundred and Eighty Cases J B Fitts Atlanta Ga —p 718
Trend of Cases of Syphilis Under Treatment or Observation in the United States T Clark and Lida J Usilton Washington D C —p 722
Ocular Neuropathies and Amauroses in Meningococcal Meningitis P M Lewis, Memphis Tenn —p 729
Adjustable Shoulder for Paracentesis Needle E Lewis Washington D C —p 734
Abortions W T McConnell Louisville Ky —p 734
Periodic Examinations W N Blount Laurel Miss —p 740

Reduction of Semilunar Bone—McBride's procedure consists of firmly anchoring the dorsal horn of the semilunar bone to the radius, thus restoring the effect of the dorsal ligament. When secured in this manner, the bone is in an attitude of complete dorsiflexion, which prevents it from slipping partially forward. The author believes that the success of an operation for late reduction depends on complete freedom of the ligamentous contraction and fibrous tissue attachments of the anterior horn to the radius the complete removal of fibrous tissue in the cavity formerly occupied by the semilunar bone, and of abnormal attachments of the os magnum, and the security of the semilunar bone in its normal articular bed, so that it cannot slip or rotate forward. In performing the operation an incision about 1½ inches long is made on the dorsum of the hand immediately to the ulnar side of the extensor carpi radialis. The vein and nerve, together with the extensor indicis tendon, are retracted to the ulnar side and the extensor carpi radialis to the radial side. The fibrous tissue in the bed formerly occupied by the semilunar bone is excavated and a smooth curved periosteal elevator is passed forward to free the anterior horn contraction from the radius. The bone which lies in a plane entirely anterior to the carpal bones is then picked into position by a Davis shield or a similar instrument. If it cannot be reduced without too much trauma it is better to make an anterior incision immediately to the ulnar side of the palmaris longus with its center over the radiocarpal articulation. The group of flexor profundus tendons is retracted to the ulnar side and the median nerve and palmaris longus tendon are retracted to the radial side. Complete reduction may be recognized by the contour of the dorsal horn. If the bone has a tendency to pull forward or is not entirely in alignment with the transverse plane of the wrist the anterior ligament is not entirely free in which case a crevice is made in the anterior face of the dorsal horn of the semilunar bone with a curet creating a hook into which a strand of number 00 plain catgut is inserted and sutured to the dorsum of the radius. The semilunar bone is thus checked in full dorsiflexion to the radius.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

10 91 142 (April) 1933

- Anesthetic Sequelae Their Recognition Cause and Prevention J Halton—p 91
Anesthetic Mortality W S Sykes—p 98
Quartet of Semiautomatic Anesthetic Apparatus P A Mansfield—p 102
*Successful Treatment for Toxic Symptoms from Ether Anesthesia Based on Biochemical Investigation R J Minnitt—p 106
Nervous Sequelae of Spinal Anesthesia H K Ashworth—p 127

Toxic Symptoms from Ether Anesthesia—Minnitt conducted an investigation in an endeavor to find a solution for some of the mysterious problems in connection with operative procedures under ether anesthesia and to suggest a successful method of treatment. He observed that the blood sugar rises and the blood pressure falls as ether anesthesia progresses and that the blood sugar is high and the blood pressure is low when symptoms of shock are present. He believes that there is some justification for thinking that the pancreatic hormone is deficient as the result of the ketosis produced in connection with ether anesthesia. He found that the administration of insulin is a successful method of treatment for postanesthetic toxic symptoms, which are always associated with a high blood sugar that it prevents these from developing, that, on the conclusion of the operation, it eliminates the injurious effects of ether anesthesia and that during the operation, when symptoms of shock appear, and immediately before and after anesthesia it acts as a preventive against the development of toxic symptoms.

British Medical Journal, London

2 223 274 (Aug 5) 1933

- Essential Vascular Hypertension H Rolleston—p 223
Fields of Vision in Connection with Intracranial Lesions A A McConnell—p 226
Fields of Vision in Intracranial Lesions H M Traquair—p 229
Vitamins in Practical Experience Note L J Harris—p 231
*Unusually High Eosinophilia of Obscure Origin Case J Murphy—p 233
Oral Administration of Nembutal as Preanesthetic Medication F T Waddy—p 234
Report on Use of Chloroform Capsules During Labor A Rees—p 241

Eosinophilia of Obscure Origin—Murphy presents a case of high eosinophilia of obscure origin with interesting clinical features. There was a definite absence of tapeworm and no history of the eating of raw pork, no signs of trichinosis and nothing in the history to suggest ancylostomiasis. The patient was given 30 grams (2 Gm) of thymol in three successive doses, with negative results. There were no symptoms of filarial infection, no localized tumor, a hydatid thrill could not be elicited in the liver, and a negative complement fixation test for echinococcus eliminated the possibility of a hydatid cyst being embedded deeply in the liver substance. Cancer of the liver could be ruled out in view of the patient's improved condition, the absence of jaundice and of any cachectic signs, and the smoothness of the liver surface. The Wassermann test was negative and there was no history of gonorrhea. The patient never had asthma, skin disease or pediculosis. The patient's excellent family history negated the possibility of inherited eosinophilia. Blood cultures, the examination for malarial parasites, the various agglutination reactions for enteric and Alcaligenes groups all were negative. The one definite thing is that he tends to get worse when not taking liver in some form. Even with active liver treatment his red blood count is only about 3,400,000 per cubic millimeter. It is unlikely that the condition is one of the so-called eosinophil leukemias, as the total leukocyte count is relatively low. The author regards this case as one of pernicious anemia with an extraordinarily high eosinophil count.

East African Medical Journal, Nairobi

10 99 128 (July) 1933

- Forefathers of Tropical Medicine H J O Burke Gaffney—p 100
Lymphogranuloma Inguinale in African Natives Three Cases J W Graham—p 115
Poisoning with Male Fern Two Fatal Cases T F Anderson and J C D Carothers—p 122

Indian Medical Gazette, Calcutta

GS 365 424 (July) 1933

- Dermographia with Short Note on Etiology of Condition Case. H W Acton and Dharmendra—p 365
Morphine Habit in India R N Chopra and G S Chopra—p 368
Some Factors Regulating Metastasis in Carcinoma and Their Influence on Prognosis M N De and S C Sinha—p 371
*Mixed Tumor of the Face, Not Associated with the Parotid Gland. P N Ray—p 373
Pantocaine in Eye Surgery G J Gnanadiekam—p 376
Frequency of Hydatid Disease in India P A Mapstone—p 377
Pellagra in Hyderabad Deccan Further Notes J Lowe—p 379
Pellagra in Guntur T K Raman—p 381
Incidence of Arsenical Dermatitis H K Chakravarty—p 383
Plea for Collapse Therapy in Early Stages of Pulmonary Tuberculosis. P T Patel—p 385
Few Observations on Pharmacology and Therapeutics of Muscle Extract. P Ganguli—p 387
Serologic Proof of Ethnologic Identity of Hindus and Mohammedans of Assam P N Mitra with comments by H P Chaudhuri—p 393

Mixed Tumor of the Face—Ray describes a mixed tumor of the face unconnected with the parotid gland, the greater part of which was composed of a large single translucent cyst containing a clear yellow fluid. Basal cells were present and some of the smaller cysts were lined by basal cells. It is known that the mixed tumor may take the form of a basal cell tumor or of adenoid cystic epithelioma. But when the cell masses are more compact, the cells tend to assume a somewhat irregular form. Histologically, the tumor has to be differentiated from endothelioma. Every unusual tumor that lacks easily recognizable characters stands an excellent chance of being labeled endothelioma. Further, atypical endothelioma can scarcely be regarded as having an established position. In the author's case there was a tendency to cylinder formation, but it is a peculiarity seen in other tumors besides cylindroma. The diagnosis of atypical endothelioma is admittedly difficult. Kettle has laid down the rule that the negative properties of a cell cannot demonstrate its origin, and it is only when the cells of a neoplasm present positive evidence of their endothelial nature that one is justified in calling the tumor an endothelioma. The formation of the cystic spaces is due to degeneration of the stroma or they are the result of desquamation or of the secretory activity of the cells of the neoplasm. There is no doubt that the varied natures of the component cells and the supporting stroma are readily explained, if the tumor is regarded as an "enchymoma" of embryonic origin. The new growth was therefore diagnosed as a mixed tumor of the parotid region, of the extraglandular variety.

Irish Journal of Medical Science, Dublin

No 91 281 328 (July) 1933

- Foundation of a Great Hospital Steevens in the Eighteenth Century T P C Kirkpatrick—p 281
Hypnotics and Preanesthetic Sedatives A R Parsons—p 304
Strangulation of Ileum Through Congenital Opening in Mesentery H Meade—p 311

Journal Obst and Gynec of Brit. Empire, Manchester

40 749 956 (Aug) 1933

- Hysterectomy Subtotal and Total Review of Mortality and Morbidity of Subtotal and Total Operations on Series of Two Thousand Three Hundred and Forty Four Consecutive Cases at the Chelsea Hospital for Women in the Ten Year Period 1922 1931 Inclusive. C D Read and A C Bell—p 749
Carcinoma of the Body of the Uterus Study of Fifty Cases J Beattie—p 768
The Menarche and Menstrual Type Notes on Ten Thousand Case Records W Kennedy—p 792
Pathology of Ovarian Tumors Part V W Shaw—p 805
Ovarian Pregnancy Description of Case W Clement—p 822
*Radium Treatment of Nonmalignant Uterine Hemorrhage Phyllis Epps—p 835
Postpartum Eclampsia Two Cases R H Paramore—p 843
Investigation on Dry Labor A H M J Van Rooy—p 850
Placenta Accreta Case B Solomons—p 855
*Maneuver for Correcting Posterior Parietal Presentation of the Child so as to Permit of Successful Delivery with Forceps R A Lennie—p 859

Treatment of Uterine Hemorrhage—Epps treated 141 patients for excessive uterine hemorrhage with radium. In the majority of instances the hemorrhage was not due to any demonstrable lesion, and in no case due to cancer. With the patient under anesthesia the length of the uterine cavity was measured by a graduated sound, and a dilation and diagnostic curettage were performed. Either 50 mg or 30 mg of radon

in a small uterus, screened by 1 mm of platinum and 15 mm of rubber, was inserted into the uterus. The rubber tube, which had been cut to correspond with the uterine length, was stitched so that an empty cuff remained in the cervical canal, the radium occupying only the uterine body. The vagina was packed with gauze wrung out in 1:2,000 solution of acriflavine hydrochloride in physiologic solution of sodium chloride. The dosage was adjusted by the length of time the radium was in place. Complications did not follow the use of radium in this series, and the patients were discharged from five to seven days after treatment, unless they were anemic. For the treatment of menopausal hemorrhage, radium is practically a specific. From this series the author concluded that a dose of 1,100 millicurie hours is satisfactory and should rarely be exceeded. In younger women, cancer being excluded, a longer trial of medical treatment should be given. Should this fail, radium is indicated before hysterectomy is considered. The minimum effective dose is advisable, in order to avoid the possibility of a premature climacteric or, if pregnancy should follow, complications of labor. Such a dose is probably 300 millicurie hours during adolescence and from 500 to 700 millicurie hours during the child bearing age. If attention is paid to the details of the technic, stenosis of the cervix and the upper part of the vagina should not occur. Sufficient time (up to six months) should elapse after treatment before its efficacy can be judged. If the condition of the patient is grave, an earlier second dose may be necessary. The use of small doses should avoid the appearance of menopausal symptoms in the young or their accentuation in the older woman. A small dose, repeated if necessary, is preferable to overdosage. Seventeen cases of uterine hemorrhage were associated with fibroids, which were small and for the most part discovered only after examination under anesthesia, a dose of from 1,100 to 1,200 millicurie hours was satisfactory in fifteen cases.

Correcting Posterior Parietal Presentation of Child—

Lennie believes that a corrected posterior parietal presentation can be maintained in its new position if the fundus of the uterus is drawn upward and forward by abdominal manipulation. By this means the body of the child is brought away from the maternal spine, thereby correcting the obtuse angle between the body and head of the child. The maneuver consists of altering the posterior parietal position into that of an anterior parietal, by pushing the sagittal suture, facilitated by a fold of the scalp, backward toward the sacral promontory. When this is accomplished the head is steadied in its corrected position, while an assistant passes his hands deeply behind the fundus and raises the uterus upward and forward. Forceps are then applied without the retaining hand being removed from the vagina, and delivery is often successfully accomplished after previous attempts with the forceps have failed. By this maneuver delivery of a live child has been made possible on many occasions when previous attempts at delivery by forceps had failed and craniotomy was advocated as the only possible line of treatment. The maneuver can be demonstrated in the living subject before delivery. When the position of the head has been corrected, it will be noted that the act of raising the fundus upward fixes the head firmly in its new position.

Lancet, London

2 2° 334 (Aug 5) 1933

- Bilious Migraine—Its Treatment with Bile Salt Preparations T C Hunt—p 29
Some Special Uses of Radon Seeds H S Souttar—p 28
Vocal Cord (Streptothrix) Organism in Four Recent Cases of Acholuric Jaundice A G Gibson—p 28
Lymphogranuloma Inguinale (Paradenitis Nostris) with Observations on Primary Lesion T Ansell Davies and A J King with notes on pathologic observations by G M Findlay—p 39
Intestinal Obstruction Due to Bands in Ileocecal Region J E. Eadham—p 290

Bilious Migraine—Hunt analyzes sixty cases of migraine forty of which were of the bilious type. Investigation by biliary drainage and oral cholecystography showed some evidence of gallbladder or hepatic disorder in seventeen of twenty-seven selected bilious cases. A higher proportion of migraine patients as a whole show evidence of gallbladder disorder than normal subjects. Evidence of stasis in the gallbladder was

found in seven of twenty-seven patients examined by biliary drainage. Local gallbladder disease or dysfunction is not a cause of migraine but may occur as the result of repeated migraine attacks or of some primary underlying hepatic or constitutional cause. Cholecystectomy had no effect in relieving migraine attacks in five of six patients. The author emphasizes the importance of inquiry for migraine attacks in subjects of gallbladder disease and its bearing on the results of cholecystectomy. He records the results of treatment by bile salt preparations by mouth in twenty-two selected patients nineteen of whom were improved, and suggests that some hepatic dysfunction may be a cause of migraine attacks in certain cases, this is supported by the results of bile salt treatment. Epinephrine given subcutaneously is capable of aborting migraine attacks in a high proportion of cases. The usual dose has been 10 minims (0.6 cc.) of the 1:1,000 solution, but 15 or 20 minims (1 or 1.3 cc.) has sometimes been given in which case it was injected slowly. Of fourteen attacks (nine patients treated), ten have been completely aborted three definitely ameliorated and one unaffected. The later the injection is given the larger it should be but the less effective is its action. Although migraine is regarded as allergic in origin, perhaps akin to a cerebral angioneurotic edema little mention appears of the use of epinephrine in its treatment. The fact that in certain cases it is capable of checking the migraine attack suggests that some vasodilatation rather than a vasoconstriction of the cerebral vessels may be at fault, though any direct effect of epinephrine on these vessels is uncertain, and of course the possibility of suggestion cannot entirely be excluded. The few opportunities that the author has had of treating the actual attacks with epinephrine make him feel that its effect may be as beneficial as in asthma, provided a sufficient dosage is employed.

Medical Journal of Australia, Sydney

2 167 196 (Aug 5) 1933

- Hospital Policy in Western Australia D Smith—p 167
Chronic Hoarseness—Its Clinical Significance Diagnosis and Treatment H Tilley—p 169
Certain Etiologic Factors of Asthma and Their Influence on Treatment A J Collins—p 174
Some Thoracic Problems in Surgery H S Stacy—p 179

Practitioner, London

131 117 220 (Aug) 1933

- Tropical Liver Hepatitis and Abscess L Rogers—p 117
Malaria and Its Effects F Manson-Bahr—p 124
Treatment of Tropical Intestinal Diseases G C Low—p 136
Diagnosis and Treatment of Typhoid Fever C E Lakin—p 146
Tropical Debility R M Carter—p 159
*Routine Treatment of Asthma A T Todd—p 168
Nasal Factor in Asthma with Especial Relation to Ethmoid Pack Therapy J A James—p 183
*Chronic Colibacillæmia Hypercholesterolemia and Cholelithiasis P Desgeorges—p 192
Thrombophlebitis Migrans H Douglas Wilson and S Miller—p 204

Treatment of Asthma—Todd recommends that, in the routine treatment of asthma, errors of diet, dentition and bedroom hygiene should be corrected. Continued sensitization of the bronchial mucosa from the ethmoid zone should be prevented by conservative surgery if necessary and the ethmoid pack should be repeated periodically. The antiallergen should be desensitized or saturated by prolonged parenteral injection of the fecal vaccine. A small dose of thyroid extract should be administered daily. The patient should be permitted to have caffeine with the addition of ephedrine to take at the first sign of an asthmatic attack. Alkalosis, hypocalcemia and vagotonia should be corrected by the prolonged administration of a mixture of calcium chloride, to which the appropriate dose of tincture of belladonna has been added.

Chronic Colibacillæmia—Desgeorges states that hemic infection of the gallbladder with *Bacillus coli* derived from the intestine is the chief factor in the causation of cholelithiasis. Colon bacilli in the blood are eliminated in both the urine and the bile. Colibacillæmia invariably reacts on the liver and bile ducts causes hypercholesterolemia and, from its frequency, is one of the chief causes of this condition. Most patients with gallstones have or have had colibacilluria and most of the subjects of chronic colibacillæmia eventually suffer from cholecistitis and biliary lithiasis. The best available prophylactic

measure as regards cholelithiasis is to prevent the passage of the colon bacillus from the intestine into the circulation and is one of the first steps to be taken in the treatment. The hypothesis of colibacillemia of intestinal origin throws light on the whole subject of biliary lithiasis and explains the chief clinical and experimental data underlying previous hypotheses of the pathogenesis of this disease.

Presse Medicale, Paris

41 1561 1584 (Oct 11) 1933

Subpatellar Rupture of Femoral Quadriceps C. Tenenbaum and C. Olivier—p 1561

*Avoiding Postoperative Accidents Accompanied by Hyperazotemia and Hyperchloremia M. Robineau and M. Levy—p 1565
Antidiphtheric Serum Therapy R. A. Marquez, A. Bourdin and Mlle D. Ronget—p 1568

Postoperative Accidents Accompanied by Hyperchloremia—Robineau and Levy recommend the prophylactic injection of hypertonic salt solution for the prevention of the postoperative accidents accompanied by hyperazotemia and hyperchloremia. All operations result in disturbances of the organism manifested by various degrees of hyperazotemia with hyperchloremia, oliguria, elaboration of large quantities of urea from the nitrogen contained in the tissues (which may remain in the blood or be eliminated in the urine), reduced elimination of chlorine and sometimes functional nephritis from loss of the power of concentrating urea. None of these serologic manifestations are individually responsible for the early or late postoperative accidents, some may be missing and their reciprocal relations are not clear, but these organic disturbances may certainly be considered responsible for the occurrence within from twenty-four to forty-eight hours after operation of an intestinal paralysis with a syndrome of occlusion and general symptoms of toxemia. They must also be considered responsible for the late accidents of the same nature appearing from eight to twelve days after the operation with general weakness, loss of weight and loss of muscular strength. Intravenous injections of hypertonic salt solution are not always efficacious in these grave postoperative accidents but if administered from the moment the operation is terminated they combat the disturbances produced in the organism. The amount of urea and chlorine in the blood remain practically normal, the rest nitrogen is lowered, uremia is nearly normal, the output of urea in the urine is not increased and the output of chlorine is not decreased. Clinically, this prophylactic treatment results in a disappearance of malaise after awaking from the anesthetic, a rapidly manifest state of well being, regularity of the pulse, moisture of the mouth, absence of thirst, decrease of vomiting (if it exists), early emission of gases after abdominal operation, and absence of fatigue. The loss of weight and strength is greatly attenuated. Above all, the prophylactic injection of salt protects the patient against all grave accidents not directly due to the act of operation.

Revue Neurologique, Paris

2 361 440 (Sept.) 1933

Organization of Proprioceptive Centers of Medullobulbopontomesencephalic Axis J. Nicolesco—p 361

*First Cerebellar Signs in Tumors of Cerebellopontile Angle Heterolateral Cerebellar Syndrome K. Henner—p 377

Tumors of Cerebellopontile Angle—Henner states that tumors of the cerebellopontile angle, before the classic cerebellar syndrome is fully manifest, give rise to the well known symptoms of cerebellar deficiency and also to their opposites. Thus, instead of hypermetria, hypometria may be observed and in the prehension test the patient may not open his hand immoderately but keep it more closed during the movement itself than would a normal person. The author considers these symptoms the result of cerebellar irritation or hyperfunction and likens them to Parkinson's syndrome, which he regards as a syndrome of cerebellar hyperfunction, the reverse of the classic cerebellar syndrome. Some symptoms of cerebellar hyperfunction or parkinsonian elements are found in practically every cerebellar syndrome. The author has observed the reverse cerebellar syndrome in ten cases of tumor of the cerebellopontile angle (seven verified, three clinically certain). On the basis of these he describes the topography and order of appearance of the reverse cerebellar symptoms or parkinsonian elements in

tumors of the cerebellopontile angle. At first one sees simultaneously with classic cerebellar symptoms certain parkinsonian elements, such as decrease of the pendular movements during walking, circumscribed plasticity in some segment of the extremities, and increase of the elementary posture reflexes, to which, perhaps, belongs the intention tremor (which some times diminishes in the later stages). Later, axial symptoms of the vermis appear, here it is difficult to separate the vestibular symptoms from the symptoms of cerebellar irritation, in view of the fact that the gray nuclei of the vermis are counted in the central vestibular system. In this stage heterolateral symptoms of cerebellar hyperfunction can be observed (localized plasticity, increased elementary posture reflexes, and so on). Homolaterally the hyperfunctional cerebellar symptoms disappear rather rapidly, but they persist longer and are more frequent on the heterolateral side. Later classic symptoms of cerebellar deficiency also appear heterolaterally. Finally in advanced stages or after trepanation all the reverse cerebellar symptoms disappear and the classic cerebellar syndrome more pronounced on the homolateral side is manifest. While this description of the reverse cerebellar symptoms is schematic, a certain regularity in the order of the symptoms can be observed if one looks for the parkinsonian as well as the classic cerebellar symptoms and for both on the two sides. This regularity is not observed in intracerebellar tumors which gives the syndrome a practical value in doubtful cases.

Annaes Paulistas de Medicina e Cirurgia, São Paulo

26 167 262 (Sept.) 1933 Partial Index

*New Species of Salmonella Genus L. Salles Gomes—p 167
Blood Eosinophilia in Parasitic Infestations S. B. Pessoa and J. Alves Meira—p 175

New Species of Salmonella Genus—Salles Gomes isolated four organisms of the Salmonella genus, one from the mucopurulent and bloody feces of a patient in the initial period of a dysenteriform syndrome, one from a specimen of purulent urine and two from the blood of two patients at the peak of a paratyphoid like infection which proved to be fatal. The agglutination test which was performed with only one of the blood specimens, gave strongly positive results. The four organisms proved to have identical characteristics as to morphology, motility, stain and culture reactions and biochemical properties related to their reactions in twenty-one carbohydrates, indole, nitrates, sulphurated and acetyl-methyl carbinol. They caused gas fermentation with salicin, did not produce indole and were pathogenic to laboratory animals. The emulsion of cultures of the isolated bacteria killed mice and guinea pigs in from twenty to twenty-four hours after injection into the peritoneal cavity. The intravenous injection of the emulsion produced death in rabbits in from thirty-two to seventy-two hours. Nevertheless mice receiving the emulsion by mouth did not die. With the aid of Castellani's tests, the author studied the serologic relations between the strains and their corresponding antiserums. He did not find any correlation between the antiserums of his organisms and Salmonella supestrifer (Voldagen), Newport, Reading and Stanley, typhimurium, aertrycke, paratyphi schottmulleri and enteritidis. He believes that the organism is a new species of the Salmonella genus and proposes to name it Salmonella pauloensis, since it was isolated from material of patients who were permanent residents of São Paulo.

Prensa Medica Argentina, Buenos Aires

20 1989 2030 (Sept 20) 1933 Partial Index

Variations of Arterial and Venous Pressure Provoked by Changes of Position in Normal and Pathologic Conditions R. A. Bullrich—p 1989

*Pulmonary Syndrome in Mediastinal Polyadenopathy Case J. J. Spangenberg and C. Rossi Belgrano—p 1997
*Chloroform in Treatment of Bronchospirochetosis R. Denis, F. J. Bares and J. D. Araoz—p 2005

Pulmonary Syndrome in Mediastinal Polyadenopathy—Spangenberg and Rossi Belgrano state that the compression of some mediastinal organs is usually caused by the presence of tumors and aneurysms in the mediastinum. Roentgen examination of patients presenting clinical symptoms of compression of the mediastinal organs is important since it may reveal the presence of hypertrophic ganglions as the cause of the compression. The authors' patient, aged 50, presented a pulmonary

syndrome with nonproductive reflex cough paroxysmal dyspnea and, on auscultation, the presence of respiratory and bronchial murmurs similar to those heard in pneumonia. The clinical picture indicated an acute attack of bilateral pulmonary disease. Nevertheless, there was no fever and the symptoms were of a stationary nature. The roentgen examination showed that the areas of apparent dullness according to the auscultation were clear and that the respiratory murmurs, the bilateral congestion of the lungs and the presence of hydrothorax and of paroxysmal dyspnea were caused by compression of the bronchi, the pulmonary veins and the sympathetic and pneumogastric nerves, respectively, by hypertrophic ganglions due to chronic mediastinal polyadenopathy of the patient.

Chloroform in Treatment of Bronchospirochetosis.—Dennis and his collaborators report the case of a man who had had apparently cured syphilis in his youth. At examination during his present illness the patient presented bronchospirochetosis, complicated by syphilitic gummatous laryngitis. The patient received six treatments with chloroform inhalations, which were given at intervals of from twenty-five to thirty minutes. The chloroform treatments were given in doses of 5 Gm each except the first in which the patient received 10 Gm. The treatments were given at three day intervals, except the second and third, which were given ten days apart on account of the intense laryngeal shock that the patient presented while taking the first inhalations during the second treatment. The ultramicroscopic examination of the sputum after the last treatment showed complete absence of spirochetes which still persists five months after the end of the treatment. The syphilitic gummatous laryngitis was completely cured by the administration of bismuth compounds.

Archiv für Kinderheilkunde, Stuttgart

100 65 192 (Sept 29) 1933

- Atypical Abortus Infection (Undulant Fever) in Small Children W Hauptmann and K Eberle—p 65
Active Immunization Against Chickenpox Z von Gulacsy—p 75
Rare Abdominal Disorders in Nurlings H Fleischer—p 80
Observations on Malignant Diphtheria A Stroe—p 86
Rare Deformities of Vertebral Column and Their Erroneous Diagnoses M Jachens—p 98
Clinical Aspects of Gonorrhea in Children L von Dobszay—p 106
Case of General Granulomatous Xanthomatosis (Schüller Christian's Disease) F von Bernuth—p 115
Sugar Therapy in Nephritides Z von Bokay and L von Kostyal—p 123
Clinical Investigations on Catalase in Blood of Healthy Children Ursula Kratschell—p 139
Peculiarities of Poliomyelitis Epidemic in Szeged in 1932 and Experiences with Prophylactic Vaccination K Wiltner—p 147
Allergy Theory of Chickenpox in Case of Encephalitis and of Severe Bilateral Choked Disk E Mayerhofer and J Breitenfeld—p 155
Long Continued Metabolic Investigations on Healthy Nurlings E Rominger and H Meyer—p 167

Active Immunization Against Chickenpox.—Von Gulacsy reports his experiences with active immunization against chickenpox in the course of an epidemic in a children's clinic. Vaccination was done in most cases by intracutaneous injection. Only in five cases was scarification done according to Kling's method. The fresh vesicular contents were collected in sterile capillary tubes diluted 1:10 with an isotonic solution of sodium chloride and injected into the skin. All children who were not vaccinated developed chickenpox, while of those who were vaccinated only 13 per cent contracted the disease in an abortive form. Thus it can be said that the vaccination has excellent protective value. The development of the immunity is not dependent on local reactions. Circumscribed reddishness and light infiltration were present in only a few cases and were probably the result of mechanical irritation. Studies of the blood pictures disclosed that the vaccination produces the same changes as does the disease.

Sugar Therapy in Nephritides.—Von Bokay and von Kostyal treated acute nephritis with an exclusive sugar diet for a number of days usually until improvement sets in the patients are given from 250 to 400 Gm of malt sugar or potato sugar and nothing else. After that some fruit and a little water are added and gradually a mixed diet is again introduced. The authors employed this treatment in fifty cases. Acute hemorrhagic glomerular nephritis was found in thirty-four of the patients, ten had subacute hemorrhagic nephritis, five chronic nephritis, six nephrosis and one a scarlet fever nephritis.

complicated by erysipelas and sepsis. This patient died on the day following hospitalization. The patients with acute nephritis recovered in fifteen days or less and those with chronic nephritis or nephrosis recovered in from fifteen to thirty days. The exclusive sugar diet rests the kidneys and thus promotes the recovery. The favorable effect of the sugar diet is partly the results of a direct action on the intermediate metabolism and partly of an indirect action by way of the liver. The sugar diet also influences the disturbed water exchange that exists in renal inflammations. It reduces the oncotic pressure of the blood and tissues, increases perspiration and reestablishes the renal and extrarenal elimination of water.

Allergy Theory of Chickenpox in Case of Encephalitis.—Mayerhofer and Breitenfeld report the history of a boy, aged 14 who nineteen days after the first appearance of chickenpox (that is, within the period of the appearance of allergic reactions) developed encephalitis with hydrocephalus followed by bilateral choked disk of 6 and 55 diopters and complete loss of vision. The chickenpox that preceded the encephalitis was extraordinarily severe (confluent varicella with variola-like scars). The epidemic in the patient's home town was mild and particularly the person who had infected this patient had a rather mild form of chickenpox. Smallpox could be excluded epidemiologically as well by the fact that the patient had been vaccinated during the first year of life and again when admitted to school (presence of four large vaccination scars). The deleterious results of the bilateral choked disk could be counteracted neither by lumbar puncture nor by the simple puncture of the corpus callosum. The choked disk did not disappear until after Forster's operation had been done. After that vision was gradually restored, until after eight months it had become completely normal again. The authors assert that the literature contains no other report of encephalitis due to chickenpox with such a severe form of choked disk. In the etiologic interpretation of this encephalitis they accept Glanzmann's allergic theory. They base this assumption on the development of the second disease nineteen days after the first appearance of the eruption and also on the fact that the patient retained a hypersusceptibility to the smallest quantities of iodine, owing to sensitization of the brain in the course of the operation. Minute doses of iodine elicited epileptic spasms of the jacksonian type.

Deutsche medizinische Wochenschrift, Leipzig

59 1453 1488 (Sept 22) 1933

- Status Lymphaticus as Peculiar Behavior Toward Infection F Munk—p 1453
Psychoses in Internal Diseases K Schneider—p 1458
Saprophytes of Milk and Their Significance G Bessau—p 1461
Disturbances in External Secretion of Pancreas K Visen—p 1464
Complement Fixation Reaction in Tuberculosis During Childhood G Joppich—p 1466
Sources of Error in Cultural Demonstration of Tubercle Bacilli in Blood L Loewenstein—p 1468
Spontaneous Pneumothorax Without Recognizable Cause J Woll—p 1469
New Pneumothorax Needle F Hochstetter—p 1470

Complement Fixation in Tuberculosis During Childhood.—In testing the reliability of the Leuchtenberger-Lorenz complement fixation reaction, Joppich found that although the reaction frequently gives positive results in active tuberculosis in children, it does so also in apparently inactive cases. Consequently it cannot be used in the differentiation of active and inactive tuberculosis. To be sure, the objection may be made that the 'inactive' cases have been wrongly estimated, that namely an active process was present but could not be detected with the available methods. But to this objection the reply may be made that the reaction was also positive in a considerable number of children who were not infected with tuberculosis which proves that the reaction is not sufficiently specific and consequently is not suitable for diagnosis in pediatric practice. The author recommends that in all complement fixation tests for tuberculosis the specificity be tested first by performing the test on serums from children who are known to be free from tuberculosis.

Sources of Error in Demonstration of Tubercle Bacilli in Blood.—Loewenstein admits that his method of demonstrating tubercle bacillema is difficult but he thinks that if certain

errors in the technic are avoided, the negative results reported by many investigators, even in severe cases of tuberculosis, will diminish and the importance of the blood culture will be realized. In acute articular rheumatism, in which so many investigators obtained negative results, it is important to withdraw the blood during the increase in fever and before treatment with salicylic acid has begun. The earlier stages of a disorder are, as a rule, better suited for the blood culture than the later stages. In tuberculosis, for instance, the blood culture may be positive at a time when the roentgenogram is still negative. The author emphasizes that during the withdrawal of the blood no disinfectant should be used, such as corrosive mercuric chloride or iodine. The walls of the tube in which the blood is withdrawn should be moistened with a 10 per cent solution of citrate. Immediately after the withdrawal the blood should be well shaken so as to prevent coagulation, for once the tubercle bacilli have been enclosed in the clot of fibrin they cannot be liberated again in the living state. The complete removal of the hemoglobin is another important factor. The culture medium should not be older than ten days and, in preparing it, care should be taken that during the coagulation the temperature does not exceed 85 C. Sterilization should be done in the steam sterilizer never in a dry sterilizer. After the culture medium has been inoculated, the tubes should be closed air tight by means of sealing wax, because the smallest air hole will lead within three weeks to drying out and hardening of the culture medium. The author maintains that with his method tubercle bacilli can be demonstrated not only in the various forms of tuberculosis (lungs, eyes, bones, skin and intestine) but also in other disorders, such as rheumatism, polyarthritis and dementia praecox.

Deutsche Zeitschrift für Chirurgie, Berlin

241 505 632 (Oct. 9) 1933

- *Studies in Physiology of Healing of Fracture—Appearance and Effect of Phosphatases O. Timpe—p. 505
- *Id. Healing of Fractures and Carbohydrate Metabolism O. Timpe and H. Reich—p. 517
- Pathology and Treatment of Snapping Temporomaxillary Joint G. Steinhardt—p. 531
- Physiologic Basis for Functional Treatment of Uncomplicated Vertebral Fractures H. Kraus—p. 553
- Clubfoot—Varieties of and Treatment Wilhelm—p. 572
- Experimental Basis for Organotherapy in Diseases of Liver and Biliary Tracts W. Felix and P. Kahn—p. 586
- Clinical Aspects and Treatment of Subcutaneous Rupture of Liver T. Herbst—p. 602
- Technical Advances in Roentgenographic Relief Presentation of Central Nervous System in Animal Experiments Wustmann—p. 615
- After Phase of Blood Clotting E. Mackuth—p. 619
- Surgical Intervention in Duodenal Ulcer O. Orth—p. 626

Physiology of Fracture Healing—According to Timpe, Robinson demonstrated the existence of phosphatases, principally in the cartilage and to a lesser degree in the various organs and tissues of young animals, which play an important part in the ossification of bones. These phosphatases are split off from the hexose diphosphoric and glycerophosphoric acids. Timpe found that these phosphatases are likewise present in the muscles and cartilage of adults under normal conditions. He further showed that there exists in the human organism in the course of healing of a fracture a third phosphatase, which splits phosphoric acid from nucleic acid. The role of this phosphatase in the healing process is just as important as that of the other two phosphatases. It was present in the callus, in the bones at the seat of the fracture, and in the muscles in the vicinity of the fracture. Its production in the muscles appears to be due to the formation and absorption of the hematoma in the muscle. The author considers the breaking down of cells the cause of the appearance of this phosphatase in the muscle, because the nucleic acid splitting phosphatase is found not only when a fracture exists but also as a result of postmortem changes.

Healing of Fractures and Carbohydrate Metabolism—Timpe and Reich state that urinalysis at regular intervals in several hundreds of patients presenting healing fractures demonstrated glycosuria in only one instance. This was of a short duration and accompanied by a mild hyperglycemia. Determinations of blood sugar in nineteen of the patients demonstrated hyperglycemia in two instances (10 per cent). Hyperglycemia was present in eight out of twenty-three cases of injury to the

skull (35 per cent). In concussion of the brain, hyperglycemia was found with equal frequency regardless of the existence of a fracture of the skull. The hyperglycemia developed shortly after the injury and persisted for a brief period only. A persistent rise of blood sugar was not observed. A traumatic diabetes probably does not occur. The transient traumatic glycosuria as well as hyperglycemia is apparently of a central nervous origin. In concussion of the brain the effect on the metabolic centers is a direct one, and in fractures of the extremities an indirect one. Stimuli proceed along sympathetic paths from the seat of fracture to the centers, which in their turn send out efferent impulses to the organs that control the carbohydrate metabolism and the liver, kidneys, suprarenals and pancreas.

Deutsches Archiv für klinische Medizin, Berlin

175 505 636 (Sept. 14) 1933

- *Action Mechanism of Oral Iron Medication on Intestinal Flora H. Lotze—p. 505
- *Pathologic and Clinical Aspects of So Called Thrombosis of Splenic Vein H. Lichtenstein and K. Plenge—p. 520
- Capillaroscopic Observations in Purpura—Contribution to Knowledge of Hemorrhagic Diathesis E. Jürgensen—p. 534
- Combined Functional Test of Heart and Lungs W. Borgard and J. Hermannsen—p. 545
- Unilateral Continuous Rhythmic Clonic Spasms in Region of Palatine Pharyngeal and Laryngeal Musculature L. M. Kugelmeier—p. 557
- Rhodan Metabolism—Rhodan Content of Blood B. Stuber and K. Lang—p. 564
- Changes in Finer Hepatic Vessels in Hypertension H. Gebhardt—p. 568
- Clinical Aspects of Tricuspid Insufficiency M. Fingerhuth and O. Bickenbach—p. 577
- *Diet Free from Chlorides with Withdrawal of Gastric Juice in Ulcer and Gastritis G. Katsch and K. Mellinghoff—p. 614
- Amyloid Nephrosis with Uremia in Carcinoma of Colon. Lydia Kuhnelt—p. 628

Iron Medication and the Intestinal Flora—Lotze reports experimental bacteriologic investigations on the action mechanism of high doses of iron. The experiments disclosed that high doses of iron have a bactericidal action on the aerobic as well as on the anaerobic intestinal flora. From this he concludes that the former opinion about the action mechanism of iron has to be extended, for its value lies not only in its direct influence on the synthesis of hemoglobin but also in its action on the intestinal flora. Whether this explanation applies only to the anemias that develop in grave colitis, in sprue or following the exclusion of larger portions of the intestine, or whether it applies also to anemias of different origins will require further investigations.

Thrombosis of Splenic Vein—Lichtenstein and Plenge discuss the differential diagnosis of chronic tumors of the spleen in hematopoietic and in hepatolienal disturbances and the confused nomenclature of splenomegaly, splenic anemia, Banti's disease and pseudo-Banti's disease. A case of their own observation presented the symptomatology of thrombosis of the splenic vein, while its anatomic examination disclosed a pronounced proliferation in the splenic pulp, reticulum and connective tissue, without involvement of the splenic vessels. On the basis of thirty-two cases reported in the literature, the authors outline the syndrome of thrombosis of the splenic vein and call attention to a group of cases in which, although the symptomatology is the same, thrombotic changes in the walls of the splenic vessels are absent. Thus the symptomatology of thrombosis of the splenic vein includes disturbances of various origins, and there is really only a syndrome of thrombosis of the splenic vein, not a disease entity. The authors attempt a classification of the cases of thrombosis of the splenic vein on the basis of the anatomic aspects. They differentiate true thrombosis of the splenic vein, true thrombosis of the splenic and portal veins, and chronic inflammatory (?) splenic tumor without involvement of the splenic vessels.

Chloride-Free Diet and Withdrawal of Gastric Juice in Treatment of Ulcer—In the treatment of fifty-five patients having ulcer and of fifteen patients having gastritis, Katsch and Mellinghoff employed a 'salt-free' diet. The foods were selected and the sodium chloride was restricted in such a manner that the daily intake of sodium chloride did not exceed 12 Gm. In addition to this, gastric juice was withdrawn by means of a permanent catheter, at first daily and later at intervals, and in

order to reduce the sodium chloride still further, salyrgan was injected to stimulate diuresis and chloride elimination. The effect was favorable and lasting improvement could be observed. The improvement was most noticeable in patients presenting hypersecretion, and even cases that had been refractory to the usual therapeutic procedures quite frequently yielded to this treatment. The hypersecretory and the refractory cases are the primary indication for the treatment, but in pyloric stenosis with persistent vomiting and in hypochloremia the treatment is contraindicated. There is a considerable loss of sodium chloride from the tissues, and the gastric secretion is reduced primarily as regards the quantity of juice but less as regards the acid concentration and the total chloride content.

Klinische Wochenschrift, Berlin

12 1473 1512 (Sept 23) 1933

- Ray Sense of Human Beings H Ehrenwald—p 1473
Fundamentals of Etiology of Gout B Bretnier—p 1475
Investigations on Haff Disease Burgers—p 1477
Synthesis of Uric Acid in Birds W Schuler and W Reindel—p 1479
Elimination of Gonadotropic Hormone of Anterior Lobe of Hypophysis in Functional Disturbances of Female Gonad C Kaufmann and O Muhlbock—p 1480
*Migrating Phlebitis Its Treatment A Buschke and A Joseph—p 1483
Estimation of Air Chamber Function of Aorta by Means of Velocity of Pulse Wave H Ude—p 1484
*Epinephrine Secretions in Insulin Hypoglycemia and in Pal's Vascular Crises B Kugelmann—p 1488
Influence of Purine Bodies on Heart Action E Flaum and R Rossler—p 1489
Standardization of Male Sex Hormone on Fish E Glaser and O Haempel—p 1491
Structure of Erythrocytes K Glaeser—p 1494
Culture of Human Tumors in Vitro Z Zakrzewski and W Kraszewski—p 1495
Involvement of Tongue in Diseases of Internal Organs W Pagel—p 1496

Migrating Phlebitis—Buschke and Joseph review the literature and report a case. Resection of thrombosed veins and injections with a circulatory hormone preparation proved unsuccessful. They resorted to injections of mercury and later combined this treatment with the administration of an iodine solution. The injections of mercury were made daily with 3 Gm of the ointment. After three weeks a considerable improvement was noticeable and after two months the phlebitic changes had largely disappeared and the pain had entirely subsided. An examination after six months revealed that the favorable effects had persisted. The authors think that the good results were primarily achieved by the mercury but admit that the iodine may have helped. They consider this success the more noteworthy since all former therapeutic measures failed to bring the desired results, largely owing to the fact that a causal therapy has been impossible, because the cause of migrating phlebitis is not completely understood as yet. They consider most probable the presence of a latent infection which flares up through external influences of a traumatic or chemical nature. The occurrence of similar venous disturbances on a syphilitic and tuberculous basis seems to corroborate this theory. In some cases of migrating phlebitis the anamnesis discloses previous acute infectious diseases, such as typhoid and influenza. Other authorities assume a focal infection in the oral cavity while one assumes a toxic or infectious disturbance of the sympathetic nervous system which in turn causes angiospastic manifestations with circulatory disturbances and impairment of the vascular walls. The authors consider the latter theory more likely than that of an allergic origin.

Epinephrine Secretion in Insulin Hypoglycemia—Kugelmann gained the impression that the hypoglycemic symptoms: palpitation of the heart, tremor, pallor and feeling of pressure over the sternum are not the direct result of the action of insulin but are caused by an increased secretion of epinephrine. He reasoned that if this theory was correct it should be possible to produce by the simultaneous administration of ergotamine tartrate and insulin a hypoglycemic condition in which the epinephrine symptoms would be absent as it is known that ergotamine tartrate checks the effects of epinephrine. By the simultaneous administration of insulin and ergotamine tartrate he succeeded in producing in four out of ten patients a hypoglycemic condition in which involvement of the vascular and

circulatory apparatus was absent. This proves that the hypoglycemic condition consists of two components, a direct insulin action and a regulatory epinephrine action. In Pal's vascular crises, during increase of blood pressure the author observed hyperglycemia, hyperleukocytosis and lymphocytosis, conditions that can be explained by an endogenic epinephrine elimination.

Medizinische Klinik, Berlin

29 1363 1394 (Oct 6) 1933

- Pityriasis Versicolor Achromia C Bruhns—p 1363
Studies on Therapeutic Action of Vaccine Immune Serum K vom Hofe and W Krantz—p 1366
Relations Between Right and Left Handedness and the Functional Pre- dominance of one Hemisphere R Klein—p 1367
*Elicitability of Babinski's Toe Reflex O Marburg—p 1369
Morphology of Erythrocytes Following Venesection A Bergel and F Kummer—p 1369
Treatment of Gastric and Duodenal Ulcers H Schwarz and M Taubenhaus—p 1372
Treatment of Lobar Pneumonia F Bardachzi and W Sekeles—p 1374
Suicide Attempt with Atropine H Jaeger—p 1377
Disease Condition of Nasal Septum in Workers with Arsenic Dreschke—p 1378
*Baths with Irradiated Salt Solutions H Szerdotz—p 1378
*Simple Method for Rapid Staining of Blood Preparations M Gutstein—p 1381
Determination of Blood Sugar by Means of Step Photometer C Urbach—p 1381
Surgical Treatment of Injuries of Hand and Finger J Schmorell—p 1382

Babinski's Reflex—According to Marburg, the reflexogenic zone of the Babinski reflex is quite extensive. Babinski first elicited it by stimulating the medial edge of the soles of the feet. Later, reports appeared about the elicibility from the external edge from the balls of the toes from the achilles tendon, by stroking the crest of the tibia or by lifting the toes and suddenly releasing them and by bending the knee against the resistance of the pressure of the hand. However, knowledge on the connection between the various means of eliciting the reflex and the pathologic-anatomic changes is still deficient, for Goldflam's attempt to employ Rossolima's modification for the differential diagnosis of multiple sclerosis did not prove reliable. The author points out that Edelmann proved in 1920 that Babinski's sign could be elicited in cases in which Kernig's sign is positive, particularly when meningitis or cerebral edema exists. Edelmann could show that in cases of meningitis, when the leg with extended knee is bent at the hip joint, a dorsal flexion of the great toe is frequently observed although Kernig's sign may be negative. This symptom may become positive in an early stage, particularly in senile meningitis, in which rigidity of the neck and Kernig's sign may be absent. Moreover, the symptom also occurs in cerebral edema. In meningitis it disappears toward the end but in cerebral edema it persists until death. The author watched for this symptom and his observations corroborate Edelmann's report. He also made anatomic studies in two cases in which the symptom had persisted until death. These two patients had had hypertension and the histologic examination disclosed severe edema of the brain and the meninges. Two patients with cerebral tumor who had a meningitic symptomatology, likewise presented the symptom. The histologic examination revealed no signs of meningitis but disclosed edematous conditions. Since it has been assumed that the Babinski reflex is indicative of impairment of the pyramidal tract the author examined the pyramidal tracts histologically but they proved intact in the patients with cerebral edema. Thus Edelmann's symptom is indicative of meningitis or of meningeal or cerebral edema. It should be remembered that the symptom may appear without Kernig's sign and that in edema it persists until death while it may disappear in meningitis. Moreover the development of this sign is not dependent on the presence of a lesion of the pyramidal tract. A lesion of the cerebral cortex or of the meninges is apparently sufficient for its appearance.

Baths with Irradiated Salt Solutions—Szerdotz shows that by the use of irradiated salt solutions a new principle has been introduced into balneotherapy. A solution of a mixture of potassium salts is irradiated for seven minutes with red light and then for fifteen minutes with the quartz lamp. One liter of this solution is then added to the bath which has a temperature of 36°C (96.8°F). The bath lasts twenty minutes and

following it, the patient rests from one-half to one hour. The first few baths usually produce a decided euphoria, but after seven or eight baths the pains often become severe again. If the reactions are too severe, the treatment should be interrupted for several days. However, after twenty baths have been given there is usually a decided improvement. The author employed the baths in the various forms of arthritis and in neuritis, myalgias and rheumatoids, with favorable results. He ascribes the efficacy of the baths to actinic energies of the irradiated salts. He thinks that certain micro rays, perhaps beta rays, are liberated in the bath and exert an activating influence on the various functions.

Simple Staining Method for Blood Preparations.—Although the panoptic method of blood staining devised by Pappenheim gives excellent results, Gutstein made efforts to find a new one that would be less complicated and more rapid so that it could be used by the practitioner during consultation. The stain prepared by him contains methylthionine chloride 2 B, thionine and acid eosin dissolved in methyl alcohol. The first preparation of the stain is somewhat complicated, but it can be kept in readiness for quick use. The prepared stain is dropped on the blood smear. After three minutes the fixation is complete and distilled water is added so as to distribute the stain evenly. Rinsing with distilled water is followed by drying with filter paper. The nuclei of the lymphocytes and monocytes show a dark violet stain, while the protoplasm appears grayish blue. The nuclei of the neutrophil leukocytes are distinctly violet and differentiation between segmented nuclei and rod-shaped nuclei is easy. The protoplasm of the neutrophils contains fine pinkish to rose-violet granules. The eosinophils show large red granules and a violet nucleus. The mast cells have large, dark violet or red-violet granules and the nuclear stain is usually indistinct. The blood platelets appear as pale bluish-violet bodies. The author states that his staining method somewhat modified can be used also for a prolonged staining of blood smears, and he is convinced that in this case it is not inferior to Pappenheim's panoptic method.

Munchener medizinische Wochenschrift, Munich

SO 1459 1496 (Sept. 22) 1933 Partial Index

- Campaign Against Tuberculosis and Racial Improvement R. Griesbach —p. 1459
- *Circulation and Respiration in Pulmonary Tuberculosis Their Significance for Indications for Collapse Therapy R. Cobet —p. 1461
- *Behavior of Blood Pressure in Hyperventilation and Oxygen Inhalation K. Voit and J. Cyba —p. 1466
- Articular Fractures D. Kulenkampff —p. 1468
- Treatment of Exophthalmic Goiter by Means of Iodine and Arsenic P. Müller and K. Livadny —p. 1471
- Unusual Case of Periarthritis Nodosa T. Kreuter —p. 1473
- Local Therapy of Skin Diseases with Vaccine of Colon Bacteria R. Rodt —p. 1476
- Intravenous Injection H. Doerfler —p. 1477

Circulation and Respiration in Tuberculosis.—Cobet differentiates between circulatory disturbances caused by toxic factors and those due to mechanical influences. He emphasizes that acute toxic circulatory disturbances do not contraindicate collapse therapy of pulmonary tuberculosis but indicate it when the toxin resorption can be checked by the collapse therapy. Chronic toxic circulatory disturbances due to toxic impairment of the myocardium contraindicate collapse therapy only when they are especially severe, which has to be determined by functional tests. In this connection the electrocardiogram and the work test are of especial value. In discussing the mechanical influences of tuberculosis on the circulatory organs, the author mentions especially those caused by the displacement of the heart and of the large vessels and those produced by the inhibition of the respiration, particularly by shrinking. He describes the symptomatology, the electrocardiographic aspects and the respiratory conditions in these disturbances and shows that the impairment of the pulmonary function can be determined on the oxygen deficiency of the arterial blood or on the rapidity of the circulation. In patients with manifest pulmonary insufficiency, collapse therapy is as a rule inadvisable. The author considers Kauffmann's water test unsuitable for the determination of the circulatory function of patients with pulmonary tuberculosis. He discusses the circulatory disturbances produced by collapse therapy. He maintains that partial pneumothorax in

which the heart is hindered by adhesions, is most frequently the cause of circulatory disturbances, but that phrenic exeresis also may lead to impairment of the circulatory function. He states that not every one who wishes to resort to collapse therapy has to perform all the complicated tests described by him, for the final decision should be based on the clinical observation. He emphasizes, however, that the tests sharpen the diagnostician's eye.

Behavior of Blood Pressure in Oxygen Inhalation.

Studies by other investigators on the relations between hypertension and dyspnea induced Voit and Cyba to investigate the influence of hyperventilation and of oxygen inhalation on persons with normal, high and low blood pressures. It was found that under the influence of hyperventilation only some of the persons with normal blood pressure show a slight decrease in pressure while persons with hypertension regularly show a small and temporary decrease in blood pressure. The influence of oxygen inhalation on the blood pressure was less noticeable and less regular in that only some of the patients with essential hypertension reacted with a slight decrease. Thus the experiments indicate that stimuli to which persons with normal pressure react only slightly or not at all elicit as a rule a noticeable reaction in patients having hypertension. This proves the abnormal reactivity of the vascular apparatus in essential hypertension. Persons with hypotension, on the other hand, are completely refractory to the stimuli. Carbon dioxide inhalation produces in all three groups a noticeable increase in blood pressure. In this case the stimulus is evidently so strong that even the persons with hypotension react to it.

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- *Prognosis in Intrathoracic Tuberculosis in Childhood C. von J. Lundquist —p. 161
- Possible Method in Treatment of Hemophilia? H. von Samson-Himmelstjerna —p. 231

Prognosis in Tuberculosis in Childhood.—In his after examination in 926 cases of children up to the age of 15 years treated in the Stockholm hospital for tuberculosis from 1910 to 1920, Lundquist found that about one fourth of all the children died from tuberculosis, three fourths of the deaths occurring in the first five years after infection. The mortality curve showed two peaks, one for children infected in the first years of life and a lower peak for those infected at puberty. The prognosis was best for children between the ages of 3 and 6. Of the 671 surviving out of the 926 78.2 per cent were well or without signs of active pulmonary tuberculosis on examination after discharge. In tuberculosis of the bronchial glands and in cases showing massive parenchymal indurations the prognosis was favorable but less favorable in cases showing roentgenologically demonstrable disseminated parenchymal indurations. In cases in which there were large cloudy shadows with indefinite contour the prognosis was grave about half of the patients had open tuberculosis and 62.9 per cent died from tuberculosis mostly within one year after admission. Of children not roentgenologically examined but having probable parenchymal lesions 20 per cent died from tuberculosis. The prognosis was especially grave in cases presenting constant hard rales and bronchial respiration 40 per cent of these patients had open tuberculosis and 87.2 per cent died from tuberculosis, more than one half within half a year and more than 70 per cent within one year after admission. Of tuberculin positive children not having certain clinical or roentgenologic changes, 16.4 per cent died from tuberculosis. In open tuberculosis the prognosis was extremely grave with a mortality of 86.9 per cent, 60 per cent of the children dying within the first year and 86.3 per cent within the first three years after demonstration of tubercle bacilli in the sputum, 84.5 per cent of these patients were approaching or at the age of puberty, and there were twice as many girls as boys. Of the eight children who had open tuberculosis and were given pneumothorax treatment, three were alive. Whooping cough and scarlet fever had no noticeable effect on the tuberculous process measles usually caused a transient aggravation, and epidemic influenza produced in some cases a flare up or an aggravation with fatal outcome and in most cases no aggravation or only a temporary aggravation.

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DIETARY AND MEDICAL MANAGE- MENT OF DISEASES OF THE GALLBLADDER

NEWER POINTS OF VIEW

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Progress in any field of medicine is not a uniform process. The introduction of new points of view for the study of the disease process, the developments of new technical methods of examination, or advances in any of the medical sciences may lead to renewed interest, intensive study and rapid progress, at least for a time. The last decade has seen such an interest in the anatomy, physiology, chemistry and pathology of the liver and biliary tract.¹

It is desirable at the present time, therefore, critically to review this literature and to point out the application of these newer points of view in improving the therapeutic management of the patient with disease of the liver or biliary tract.

Mann² has reported, in summarizing both the literature and his own studies, that he has come to consider the gallbladder as a part of a mechanism whereby the secretory activity of the liver is correlated with that of the gastro-intestinal tract. In the fasting state preceding a meal, the liver is active but the amount of bile secreted is relatively small. The gallbladder is partially filled with concentrated bile, of which the bile salts are a most important constituent. The sphincter at the end of the common duct allows amounts of bile to escape into the duodenum only at infrequent intervals and most of the bile secreted by the liver passes into the gallbladder. As soon as the ingested food passes the pylorus the chyme causes the sphincter to relax and coordinately with this the gallbladder expels a portion of its contents. The bile salts are quickly absorbed from the intestine and stimulate the liver to increased activity. With the increased secretion of bile there is an increased flow of bile to and from the gallbladder. With the stomach empty and chyme no longer

pouring over the papilla, the sphincter opens less frequently, and gradually the secretory activity of the liver is reduced to that of the fasting state. It therefore appears that the function of the gallbladder is to provide a reserve of concentrated bile which is of value both in digestion and as a means of stimulating the liver to increased activity at the time the gastro-intestinal tract is most active.

The data on which this hypothesis is based are varied and, in many particulars, still a subject for controversy. The ability of the gallbladder to concentrate the bile from several to ten fold, suggested by the work of Kemp,³ Hammarsten⁴ and Hohlweg,⁵ was conclusively proved by Rous and McMaster⁶ and by Mann and Bollman.⁷ Whether substances other than water and inorganic salts are absorbed, however, is still under debate. Examination of the gallbladder of a dog several days after the ligation of the common bile duct shows the surface lymphatics to be distended with bile-stained fluid, while two or three months later the contents of the gallbladder are reduced to a small amount of inspissated mucus that may fail entirely to give the chemical tests for unchanged bilirubin or bile acids. Mann⁴ has reported experiments indicating absorption of bile salts from the gallbladder, and Andrews and his associates¹⁰ think that such absorption and the consequent ratio of bile salts to cholesterol is an important factor in the deposition of cholesterol crystals from the bile. There would seem on one hand to be some evidence for assuming that the gallbladder is able to absorb bile salts from the contained bile. On the other hand, the fact that the gallbladder bile normally contains several times as much bile salts as hepatic bile suggests that such absorption usually is small in extent, at least when compared to the accompanying absorption of water.

The deposition of lipids or, more particularly, cholesterol in the mucous membrane of the gallbladder noted by Naunyn¹¹ has been termed the "strawberry gallbladder" by MacCarty¹² and, more recently, "choles-

5. Kemp G. Experimental Researches on the Function of the Mucous Membrane of the Gallbladder Principally with Reference to the Conversion of Hepatic into Cystic Bile. *Proc. Roy. Soc. Med.* 8: 133-140, 1856-1857.

4. Hammarsten O. Zur Chemie der Galle. *Ergebnisse der Physiologie* 4: 122, 1905.

5. Hohlweg H. Ueber Störungen der Salzsäureabscheidung des Magens bei Erkrankungen und nach Exstirpation der Gallenblase. *Deutsches Arch. f. klin. Med.* 108: 255-276, 1912.

6. Rous J. Devion and McMaster P. D. The Concentrating Activity of the Gallbladder. *J. Exper. Med.* 31: 47-73 (July) 1921. *Physiological Causes for the Varied Character of the Stasis Bile* *ibid.* 34: 75 (July) 1921.

7. Mann F. C. and Bollman J. I. The Relation of the Gallbladder to the Development of Jaundice Following Obstruction of the Common Bile Duct. *J. Lab. & Clin. Med.* 10: 540-543 (April) 1923.

10. Andrew Edmund, Schoenheimer Rudolf and Harding Leo. Function of Gallbladder. I. Chemical Factors and the Role of the Gallbladder. *Arch. Surg.* 25: 90-110 (Oct.) 1932. Dostal J. F. and Andrew Edmund. Function of Gallbladder. III. Effect of Diet on the Bile Salt-Cholesterol Ratio. *Arch. Surg.* 26: 258 (Feb.) 1933.

11. Naunyn J. *Klin. Wochenschr.* 10: 1692 (1892).

12. MacCarty W. C. The Frequency of Strawberry Gallbladder. *Ann. Surg.* 69: 131 (Feb.) 1919.

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Read before the Section on Pharmacology and Therapeutics at the Eighteenth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Moore W. C. *Mechanics of the Digestive Tract*. New York: Paul B. Hoeber, Inc. 1925. Graham F. A. and Cole W. H. Recent Anatomical Examination of the Gallbladder. *J. A. M. A.* 82: (Feb. 10) 1-4. The Effect of the Gallbladder and Bile Ducts. Philadelphia: Lea & Febiger, 1930.

2. Mann F. C. A. Physiology. Consideration of the Gallbladder. *J. A. M. A.* 87: 80-90 (Sept. 13) 1924. The Function of the Gallbladder. *Phys. Rev.* 4: 231-237 (April) 2.

terosis" by Mentzer.¹³ The pathogenesis of this condition is now a source of acute controversy. Some investigators, as Sweet¹⁴ and Halpert¹⁵ hold that it is evidence of absorption of cholesterol from the bile by the epithelium of the gallbladder, others, as Elman and Graham¹⁶ hold to the earlier view of Naunyn¹⁷ and Aschoff¹⁸ that the gallbladder secretes cholesterol into the bile. Others, as Wilkie and Doubilet,¹⁸ insist that the wall of the gallbladder behaves as a semipermeable membrane and that passage of cholesterol in or out depends on the relative concentration in the blood and bile. In any case, as emphasized by Twiss and Kilian,¹⁹ the concentration of cholesterol in gallbladder bile as compared to that in hepatic bile is relatively much greater than that of other biliary constituents. That the gallbladder epithelium has some secretory activity apart from the secretion of mucus, is indicated by the experiments of Mann⁴ with rose bengal.

Until recently it was a question as to whether the gallbladder ever really empties. For a long time Sweet²⁰ and Halpert¹⁵ have insisted that it never empties at all. The introduction of cholecystography by Graham and Cole¹ has done much to answer this question. When cholecystography is combined with duodenal drainage, the results in normal individuals may be dramatic. In such an experiment the patient is given the dye in the usual way. The following morning duodenal drainage is started. If successful, dilute bile (the A bile of Lyon²¹), is obtained. This bile contains little if any dye. Roentgenograms show the tip of the tube in place in the duodenum and a distended gallbladder. Stimulation by magnesium sulphate or olive oil then produces a flow of dark concentrated bile (B bile) containing much dye. This is followed by a flow of light bile (C bile) containing little dye. Roentgenograms at the end of the experiment show a marked reduction in the size of the gallbladder. While such experiments show that the gallbladder does empty, there is an extensive experimental literature which indicates that it perhaps never empties completely, and that the urinary bladder and several days may elapse before the entire content at any one particular time is removed.

Once it is accepted that the gallbladder does empty into the duodenum, the question of the mechanism involved becomes paramount. The effect of respiratory movements, changes in intra-abdominal pressure, the elasticity of the viscus, variations in the tonus of the duodenal wall or of the sphincter of Oddi, and the existence of a reciprocal innervation between the sphincter and the gallbladder²² have been discussed at length. More recently, attention has been focused on

the role of the intrinsic musculature of the gallbladder. Various observers from Doyon²³ to Potter and Mann²⁴ have noted that when the gallbladder or common duct is connected to a manometer there are small rhythmic variations in pressure that could be interpreted as due to contractions. Boyden²⁵, Whitaker,²⁶ and Higgins and Mann²⁷ have conclusively shown contractions in the gallbladder of various species from fish to guinea pigs, cats and dogs. Cholecystography furnishes at least presumptive evidence that similar contractions may occur in man. Furthermore, Ivy and his students²⁸ have shown the presence in animals of a hormonal mechanism (cholecystokinin) which produces contraction of the gallbladder. They believe that the efficiency of such fatty substances as cream, egg yolk, olive oil and oleic acid in producing contraction and emptying of the gallbladder is to be explained by their action in stimulating the production of cholecystokinin in the mucosa of the duodenum rather than to a specific stimulatory effect of these materials either on nerve endings in the duodenum before absorption or on the wall of the gallbladder after absorption. Ivy²⁹ has also shown the effectiveness of cholecystokinin in causing emptying of the gallbladder in man.

The importance of the sphincteric mechanism at the duodenal end of the common duct as pointed out by Giordano and Mann³⁰ must not be minimized. Ivy, Voegtlin, and Greengard³¹ have recently reported experiments on a human subject in whom, after the injection of the cholecystokinin solution, gallbladder pain was produced by the contraction of the latter viscus concurrently with the development of spastic obstruction of the intramural portion of the common bile duct. In this case the intraduodenal administration of magnesium sulphate was effective in relieving the spasm and distress. Since cholecystokinin is formed after the eating of fats functional disturbances analogous to those in the subject reported by Ivy, Voegtlin and Greengard³¹ may explain some of the intolerance to fats, which is a frequent complaint of patients with chronic cholecystitis.

It is manifestly impossible at the present time to discuss, in detail, the pathologic lesions involving the biliary tract. Chronic cholecystitis with or without accompanying cholelithiasis greatly exceeds all other lesions in frequency and medical importance. The problems concerned with the cause and formation of gallstones are by no means settled. It is now recognized that the gastro-intestinal disturbances, which Moynihan³² considered the "inaugural" symptoms of

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20 Sweet J E. The Gallbladder. Its Past Present and Future. *Internat Clin* 1 187 226 (March) 1924

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27 Higgins G M and Mann F C. Observations on the Emptying of the Gallbladder. *Am J Physiol* 78 339 354 (Oct.) 1926

28 Ivy A C and Oldberg Eric A. Hormone Mechanism of Gallbladder Contraction and Evacuation. *Am J Physiol* 84 599 (Oct) 1928. Ivy A C, Kloster G, Lueth H C and Drewyer G E. On Preparation of Cholecystokinin. *Am J Physiol* 91 336 344 (Dec) 1929. Voegtlin W L, McEwen E G and Ivy A C. On the Humoral Agents Concerned in the Causation of Gallbladder Contraction. *Am J Physiol* 103 121 130 (Jan) 1933

29 Ivy A C. Factors Concerned in the Evacuation of the Gallbladder. *Medicine* 11 345 370 (Sept.) 1932

30 Giordano A S and Mann F C. The Sphincter of the Choleochus. *Arch Path & Lab Med* 4 943 957 (Dec) 1927

31 Ivy A C, Voegtlin W L and Greengard Harry. The Physiology of the Common Bile Duct. A Singular Observation. *J A M A* 100 1319 1320 (April 29) 1933

32 Moynihan G G A. Inaugural Symptoms. *Brit M J* 2 159/1601 1908

gallstones, are the symptoms of cholecystitis and have no direct connection with the presence of stones.³³ Whether gallstones are the result of an antecedent cholecystitis or by mechanical irritation are responsible for the development of a subsequent cholecystitis is not a question that can be answered at the present time. In special cases it can be shown that one or the other of these two mechanisms is presumably responsible for the troubles of the patient, but in general they can be discussed together. However, if medical therapy is ever to supplant surgery in this field of medicine it will be necessary to recognize and correct disturbances in the biliary tract before the formation of calculi.

There are various predisposing causes that must be considered in relation to the production of either cholecystitis or cholelithiasis. Particular emphasis is placed on the effects of (1) biliary stasis, (2) infection, (3) disturbances in pigment excretion, or (4) cholesterol metabolism, (5) obesity and (6) pregnancy.

Biliary stasis with stagnation of the bile in the gallbladder is important. Such stasis presumably permits greater concentration of the bile and so favors deposition of insoluble matter. It is further assumed that stasis favors the development of both infection of the bile and inflammatory processes in the wall of the gallbladder.

Infection may involve either the bile or the gallbladder, or both. Bacteriologic studies have found streptococci, which have been considered to result from focal infection arising primarily in the teeth, tonsils or appendix. Cholecystitis is a frequent complication in typhoid, and a residual infection of the biliary tract is responsible for many typhoid carriers. This is a cause of disease of the biliary tract, which we hope is of diminishing importance. These two types of infection are usually thought to be blood borne, though whether the organism reaches the gallbladder through the bile, through the cystic artery or by lymphatic extension from the liver is a source of controversy. Hurst³⁴ believes that the majority of cases of cholecystitis are due to infection with the colon bacillus and are the result of an ascending infection to the gallbladder from the duodenum.

Metabolic disturbances may affect the excretion of either bile pigment or cholesterol. Small irregular, dark brown or almost black stones composed of pigment and calcium with only slight, if any, degree of accompanying cholecystitis are frequently found in patients with congenital hemolytic jaundice. According to Giffin³⁵ they occur in 58 per cent of such cases. In this condition it is recognized that there is a marked pleochromia of the bile as a result of the excessive excretion of bile pigment. Greene and Snell³⁶ found in dogs that the intravenous injection of bilirubin or of hemoglobin increased the excretion of pigment in the bile but that significantly this augmented rate of excretion was brought about primarily by an increase in concentration. They report two experiments in which the concentration of bilirubin in the hepatic bile rose to 1,000 mg per hundred cubic centimeters or from six to twenty times the usual normal values.

Similarly concentrated bile has been observed in dogs following the experimental production of anemia by the administration of phenylhydrazine. If such concentrated bile remains in the gallbladder long enough to undergo much further inspissation, it would not be surprising if deposition of the excess pigment and calculus formation should occur.

Disturbances in cholesterol metabolism frequently result in the formation of gallstones. The waxy, glistening gallstone composed of a radiating mass of cholesterol crystals is most characteristic, but, according to McNee,³⁷ only some 6 per cent of gallstones are of this type. Twenty per cent are combination stones in which a cholesterol stone serves as a nucleus for the subsequent deposition of pigment and calcium, 64 per cent are mixed stones built up of concentric layers of cholesterol, pigment and lime salts. It is frequently assumed that the pure cholesterol stone is deposited as the result of a primary metabolic disturbance which may be independent of any element of cholecystitis. The effect of infection in causing the deposition of pigment and calcium is evidenced in the mixed types of stones. Pickens, Spanner and Bauman³⁸ have recently pointed out that gallstones, on the average, consist of 94 per cent of cholesterol with only some 3 per cent of pigment and 1 per cent of calcium present. Under these conditions the importance of cholesterol and of disturbances of cholesterol metabolism in the formation of calculi is obvious.

A tremendous amount of work has been done on different phases of cholesterol metabolism, but here also there is no final agreement as to the origin, function or fate of this material. According to the recent review of Muller³⁹ it is probable that the cholesterol in the body is both endogenous and exogenous in origin. The relative importance of these two sources has not been finally determined, though most observers consider that the greater proportion of the cholesterol is absorbed from the food and is excreted in the bile. A smaller amount is excreted in the bowel. The presence of bile in the intestine favors the absorption of cholesterol but is not essential thereto.

According to this view the liver has a regulating function and is active in maintaining the cholesterol content of the blood at a fairly constant level. In some types of hepatic disease, especially when biliary obstruction is present the cholesterol content of the blood is increased, while that in the bile is reduced. Normally, apart from the diurnal variations pointed out by Bruger and Somach,⁴⁰ it is difficult to affect the cholesterol level of the blood though slight and transient increases may be produced by a meal rich in cholesterol, particularly if fats are fed in addition. There is considerable evidence that, with the prolonged use of foods rich in cholesterol, hypercholesteremia develops and is accompanied by an increased excretion of cholesterol in the bile. Independently of the cholesterol intake diets rich in fats or any other measure that produces an increase in the fat content of the blood also produce hypercholesteremia. Diets low in cholesterol especially if they are low in fat as well, lead to a reduction in the cholesterol content of the

³³ Hurst A. F. Diagnosis and Treatment of Cholecystitis and Intestinal Gallstone. Brit. M. J. 2 (1926) (Oct. 16) 1926.

³⁴ Hurst A. F. B. Chol. Cystitis. (Civ. Hosp. Rep. 82: 391-400 (1914) 1915.

³⁵ Giffin H. Z. Hemolytic Jaundice. A Review of Seven Cases. Can. J. Med. 2: 15-161 (Aug.) 1917.

³⁶ Greene C. H. and Snell A. M. Studies in the Metabolism of the Bile. The Sequence of Change in the Bile and Bile Following the Intravenous Injection of Pigment. J. Biol. Chem. 75: 691-1 (1921) 1922.

³⁷ McNee J. W. Cholesterol. An Account of Its Relations to Pathology and Physiology. Quart. J. Med. 7: 221-236 1913 1914.

³⁸ Pickens M., Spanner C. O. and Bauman J. The Composition of Gallstones and Their Solubility in Dog Bile. J. Biol. Chem. 95: 505-507 (March) 1922.

³⁹ Muller C. I. The Cholesterol Metabolism in Health and Disease. Medicine 9: 119-1 (May) 1930.

⁴⁰ Bruger M. and Somach J. Diurnal Variations of the Cholesterol Content of the Blood. J. Biol. Chem. 97: 23 (July) 1932.

blood. If hypercholesteremia is present such diets frequently produce a return to normal but do not reduce the cholesterol content of the blood below normal. We have found hypercholesteremia in a large proportion of patients with chronic cholecystitis or cholelithiasis without biliary obstruction. The bile cholesterol is increased in some but not all cases. In these cases a diet low in cholesterol and at times the use of repeated duodenal drainages frequently results in a return toward normal of the blood cholesterol associated with an improvement in the clinical condition of the patient.

There is a definite sex difference in the incidence of cholecystitis and cholelithiasis, and various factors have been proposed to explain the greater frequency in females. Two of the most important of these are obesity and pregnancy.

In obesity there seems to be a disturbance in cholesterol metabolism, but a definite relation between the cholesterol content of the blood and the degree of obesity has not been established. Rapid weight reduction or starvation with mobilization of fat apparently liberates considerable quantities of stored cholesterol and produces a resultant hypercholesteremia. Under these conditions it should be emphasized that while weight reduction is important in the obese patient it should be gradual, and care should be taken to avoid stasis during the period of reduction.

Hypercholesteremia also occurs in pregnancy, apparently this is due in part to retention for, according to Pribram⁴¹ and to Bacmeister,⁴² the bile cholesterol is at first reduced. In the later months of pregnancy and post partum the retained cholesterol was found by McNee⁴³ and Bacmeister to be eliminated in part in the bile. Bodily activity is apt to be reduced during pregnancy and constipation is usual. In addition Mann and Higgins⁴⁴ have recently shown that the muscular activity of the gallbladder is diminished in pregnant animals. All these factors promote biliary stasis and so favor the formation of calculi and the development of biliary infection during pregnancy.

The fundamental requirement for satisfactory results in the treatment of gallbladder disease is a correct initial diagnosis. A careful and complete diagnostic work-up is essential, for there is no one method of diagnosis that is infallible. In the majority of patients, symptoms are usually indefinite. Typical colic is by no means always associated with stones. Physical examination is frequently of little assistance except in acute conditions or in cases of jaundice. The limitations of cholecystographic study must be recognized, for a diseased gallbladder may visualize and empty normally even though stones are present. Conversely, there may be no visualization on repeated cholecystographic examination and still laparotomy may reveal an apparently normal gallbladder. We have found nonsurgical biliary tract drainage a valuable supplementary method of diagnosis, provided the drainage is properly performed and the results are correctly interpreted, particularly in regard to the absence of concentrated bile or the presence of pathologic elements in the biliary sediment.

The selection of a group of 500 patients as having gallbladder disease has been made in the clinic for diseases of the biliary tract at the New York Post Graduate Hospital, in accordance with the complete diagnostic routine described elsewhere.¹⁰ In addition to the examination of the biliary tract, other tests such as urinalyses and blood counts have been done as a routine. When indicated, roentgenologic studies of the gastro-intestinal or urinary tracts have been made. The patients who gave evidence of biliary tract disease only have been studied over a period of three years the initial diagnostic study being repeated periodically to determine the effects of treatment and to correlate these observations with the clinical course of the disease. Details as to the results of the treatment will be published in a subsequent paper.

The general plan of medical treatment followed in these patients has been based on consideration of the foregoing principles and may be considered under the heading of (1) prevention of biliary stasis, (2) prevention or treatment of inflammation of the gallbladder or bile ducts, (3) diet and (4) removal of calculi when once formed. So far, progress other than surgical in this last type of therapy has been nil and need not be considered further.

The value of attention to the general hygiene of the patient, of regular habits, moderate exercise, deep breathing, avoidance of constipation, freedom from mental strain and worry and the like has been amply demonstrated by experience. In the past this improvement has been ascribed largely to the relief of biliary stasis. Horseback riding has long been favored to stir up a sluggish liver and cause emptying of the gallbladder. In the light of present knowledge of the physiology of the biliary tract, it would seem now that the value of such measures is to be ascribed as much to the improvement in muscular tone and the state of the general health of the patient as to any specific action on the gallbladder. This remark however is not to be interpreted as in any way minimizing the importance of such general measures.

Removal of foci of infection, particularly as regards the teeth and tonsils, is important as a means of preventing or treating infection in the biliary tract. Hurst,³⁴ among others, has emphasized the importance of attacks of indigestion or acute gastritis in permitting ascending infection of the biliary tract, particularly with colon bacilli. He also stresses the value of methenamine as a biliary antiseptic in such cases.

Various spas have long been favored for the treatment of diseases of the liver and biliary tract. Apart from regulation of the hygiene of the patient and the use of diets, this type of therapy depends on the use of mineral waters. These contain saline cathartics in varying amounts the active agent usually being magnesium sulphate, sodium sulphate, sodium phosphate or a mixture of these salts. It is now accepted that saline cathartics as well as the ever popular calomel have little action in stimulating the secretion of bile, but they prevent constipation ensure regular action of the bowels, and favor emptying of the gallbladder. The use of duodenal drainage also facilitates the latter. This is a valuable diagnostic procedure, but questions of time and expense lessen its value as a routine therapeutic measure.

Alkaline powders when given before meals frequently relieve reflex gastric symptoms. Sedatives such as phenobarbital or bromides give excellent results, espe-

⁴¹ Pribram E. C. Cholesterol Metabolism in Pregnancy and Child birth Arch f Gynak 119 57 68 (June) 1923

⁴² Bacmeister A. and Havers C. Zur Physiologie des Cholesterin stoffwechsels Deutsche med Wchnschr 40 385 388 1914

⁴³ McNee J. W. Zur Frage des Cholesteatingehalts der Galle während der Schwangerschaft Deutsche med Wchnschr 39 994 996 1913

⁴⁴ Mann F. C. and Higgins G. M. Effect of Pregnancy on the Emptying of the Gallbladder A Preliminary Report Arch Surg 15 552 559 (Oct) 1927

cially in nervous or neurotic patients. The use of these drugs with antispasmodics or alkalis at times is especially effective. We have used cholagogues with symptomatic relief in some cases, sodium dehydrocholate being the preparation usually given.

While the occurrence of a typical biliary colic followed by jaundice is diagnostic, it usually indicates the presence of gallstones and the need for surgical rather than medical management of the patient. The early symptoms of cholecystitis, the "inaugural symptoms of cholelithiasis" of Moynihan,³⁸ are not localized to the biliary tract. Much of the epigastric fullness and distress, the flatulence and nausea of which these patients complain is due to disturbances in the activity of the stomach, duodenum and bowels, produced partly as a result of secondary reflex disturbances and partly as a result of interference with normal digestion. This relationship has been pointed out by von Noorden and Salomon,⁴⁰ Chester Jones,⁴⁰ and recently discussed in detail by Alvarez.¹

Von Noorden⁴¹ has called attention to the secretory disturbances of the stomach and intestinal tract which he attributes to catarrhal conditions. He states that gastric hypo-acidity may not produce any symptoms but nevertheless has an effect on the biliary tract, particularly in regard to the loss of protective action against external bacterial invasion. Hyperacidity, he feels, is more frequently associated with pain and furthermore produces excessive stimulation of the bile flow. This can be prevented by regulation of the acidity. Von Noorden⁴¹ also calls attention to the frequent association of the "lazy colon" with gallbladder disease. The importance of the spastic sigmoid is emphasized particularly, for it sometimes causes colic which may be mistaken for biliary colic.

The value of frequent small meals and of a bland nonirritating diet that is free from coarse fiber and leaves only a small residue is generally accepted as basic in the treatment of chronic cholecystitis and the associated gastro-intestinal disturbances. The various topics previously discussed in this paper, however, show that no single diet is applicable to the management of all patients.

When the patient is obese, reduction in weight is imperative. In this case fats should be eliminated from the diet and the intake of cereals and starches reduced to keep the total intake of food below the caloric requirements.

A certain proportion of patients with disease of the biliary tract complain of intolerance to food. Some have been literally afraid to eat and are semistarved and underweight in consequence. In such cases the bland diet is important. In addition, when the patient is underweight every effort should be made to increase the caloric intake. Frequent feedings either four or five small meals daily or the use of intermediate nourishment between the usual three meals, a liberal intake of starches and cereals and, if possible, the addition of cream, butter or olive oil to the diet is desirable to facilitate gain in weight.

In some instances the intolerance to food is due to reflex gastric disturbances with the development of the syndrome of hyperacidity which is usually considered

characteristic of peptic ulcer. In such cases a modified ulcer type of management with or without the use of alkalis is indicated.

Many patients show a definite intolerance to fats. The importance of bile in the absorption of fats has long been known. This is partly due to its action in activating the pancreatic lipase, partly to the action of the bile salts in favoring emulsification and solution of the fats and partly, as more recently emphasized by Wieland and Sorge⁴⁸ and by Verzar and Kuthy,⁴⁹ to the formation of addition compounds between the bile salts and the fatty acids, which are thereby absorbed directly into the portal blood stream.

Friedrich von Muller⁵⁰ long ago showed the great diminution in the absorption of fat that occurs in the presence of complete biliary obstruction. Many patients with cholecystitis complain of discomfort following a fat meal, which is probably best explained by the effect of fats in stimulating the formation of cholecystokinin. This stimulates the gallbladder to contract and, in the presence of active inflammation or of any disharmony in the reciprocal action of the gallbladder and the sphincter of Oddi, may well cause pain. On the other hand, if there is no intolerance, cream, egg yolk, olive oil or oleic acid are valuable additions to the diet, for

TABLE 1—Cholesterol Content of Various Foodstuffs

Food	Per Cent	Food	Per Cent
Brain cattle	37.27	Rabbit whole	0.117
Liver	34.03	Bacon fat	0.108
Kidney mutton	34.03	Corn sweet	0.100
Pancreas calf	7.12	Meat chicken	0.105 0.040
Thymus calf	2.3	Meat veal	0.088 0.054
Roe salmon	2.2	Meat beef fresh	0.06
Egg yolk	25.134	Meat pork	0.048 0.046
Egg whole	0.49-0.24	Cream cheese	0.085
Chicken	0.527 0.049	Bacon	0.078 0.035
Fats lard suet	0.35 0.10	Flour white	0.026
Muscle dried (beef)	0.23	Rice	0.026
Butter	0.22 0.185	Milk cow s	0.03 0.013
Blood beef	0.194		

in the presence of a functionally competent gallbladder they stimulate the formation of cholecystokinin and aid biliary drainage.

The significance of hypercholesteremia in relation to the possible formation of gallstones has already been discussed. The routine determination of the cholesterol content of the blood is a valuable procedure in these patients. When this value is increased, foods rich in cholesterol, such as brain, eggs, butter, goose, duck, liver, sweetbreads or cream, should be excluded from the diet.

The cholesterol content of various foodstuffs is given in table 1. This represents a compilation of the majority of values given in the literature⁵¹ for the cholesterol content of food. Many of the analyses are old. There is no distinction between cholesterol and other sterols. The need for a more accurate and comprehensive series of analyses is obvious. In the past, beans and peas have been proscribed, but Schoenheimer⁵²

⁴⁸ Wieland H. and Sorge H. Untersuchungen über die Gallensäuren. 2. Zur Kenntnis der Choleinsäure. *Ztschr. f. physiol. Chem.* 97: 127, 1916.

⁴⁹ Verzar F. and von Kuthy A. Die Bedeutung der gesättigten Gallensäuren für die Fettresorption. *Biochem. Ztschr.* 270: 451, 1931. Die Bedeutung der Gallensäuren für die Fettresorption (Arbeiten über Resorption) *ibid.* 407: 369, 1929.

⁵⁰ von Muller, Friedrich. Untersuchungen über Icterus. *Ztschr. f. klin. Med.* 12: 511, 1857.

⁵¹ Alderallen, Emil. *Biochemisches Handlexikon* 3: 268, 309. Brueger M. *Erkrankungen der inneren Medizin und Kinderheilkunde*. Berlin: Julius Springer, 1922. von Noorden C. H. and Salomon H. *Erkrankungen der klinischen Medizin*. Handbuch der Ernährung, *Lehre*, p. 44.

⁵² Schoenheimer R. Die Spezifität der Cholesterinresorption und ihren Biologische Bedeutung. *Klin. Wchnschr.* 11: 1793 (Oct. 22) 1912.

³⁸ von Noorden C. H. and Salomon H. *Handbuch der Ernährungslehre*. Klinischen Medizin. Allgemeine Pathologie der Diätetik. Berlin: Springer, 1930.

³⁹ von Noorden C. H. and Salomon H. *Drug and Food Statistics*. *Diagnosis of the Diseases of the Gastro-Intestinal Tract*. New York: A. C. S. Co., 1930.

⁴⁰ von Noorden C. H. *Dietetic Principles in Clinical Medicine*. Chicago: C. C. Thomas, 1930.

⁴¹ von Noorden C. H. *Dietetic Principles in Clinical Medicine*. Chicago: C. C. Thomas, 1930.

has recently pointed out that while they contain considerable amounts of sterol the latter is not cholesterol but phytosterol which is not absorbed by the mammalian intestine. These vegetables may therefore be included in the diet. In addition, the fat content of the commoner foods is given in table 2.

These tables have been used in the selection of a series of diet lists embodying the principles here discussed. Their usefulness has been amply demonstrated in practice, as they have been in use for over three years.

The general principle of a bland diet is followed in each of the five diets. The first three diets are limited in cholesterol and fat intake and are indicated for those patients having an intolerance to fats, active inflammation of the gallbladder, a nonfunctioning gallbladder (as shown by biliary tract drainage and lack of visualization on cholecystographic study), a hypercholesteremia or cholelithiasis. Diet 1 has a low caloric value for use in obese patients. Diet 2 differs from diet 1 in that it has an increased carbohydrate and caloric value and is therefore useful in underweight patients as well as in cases of cirrhosis of the liver or jaundice. Diet 3 differs in the more strict avoidance of all stimulating and irritating foods and is used for patients having excessive gastric hyperacidity. Diets 4 and 5 are relatively high in cholesterol and moderately high in fat content; these diets are used to stimulate the evacuation of the gallbladder in patients having an atonic or poorly functioning gallbladder (with patent cystic duct) without fat intolerance, hypercholesteremia or cholelithiasis. Diet 4 is low in caloric value (for obese patients). Diet 5 is high in carbohydrate and caloric value.

These diet lists are not to be considered all inclusive. The importance of individualization in the management of each patient is to be stressed.

General Directions for Use With the Gallbladder Diets

Meals	Meals should be small in amount and taken at the same time each day. Large meals and overeating are detrimental. Chew all food carefully; the teeth must be in good condition.
Rest	A rest of a half hour lying down should be taken after the noon and evening meals. This allows the food to digest which is impossible with mental or physical work immediately following meals.
Bowel Movements	An effort should be made to move the bowels every day after breakfast regardless of inclination. If the bowels do not move every day this should be reported to the physician so that medication may be prescribed.
Exercise	A proper amount of outdoor exercise is essential for the proper functioning of the gallbladder and all other organs. A walk of at least forty blocks should be taken every morning, deep breathing being taken at this time to stimulate the action of the gallbladder.
Water	At least eight glasses of water are to be taken daily. A glass of water preferably hot should be taken on arising in the morning. The other water should be taken between meals rather than with meals.
Medication	As directed by the physician.

DIET 1—Low Cholesterol, Low Fat, Low Caloric

Breakfast

Fruit	Orange juice, baked apple, apple sauce or stewed prunes with a little sugar and milk, no cream.
Eggs	One egg may be taken three times weekly, soft boiled or poached with a thin slice of lean crisp bacon.
Bread	A half slice of toasted white bread with a little marmalade, jelly or jam.
Beverages	A small cup of coffee, Sanka coffee, Postum or tea with 1 teaspoonful of cream, 1 lump of sugar.

Lunch and Dinner

Soups	A small portion of consommé, chicken, tomato or clear vegetable soup may be taken once daily. No creamed soups or fats.
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Meats	A small portion of lean meat or fish twice daily. Meats: Roast beef, lamb (leg), chicken, ham. Fish: Cod, trout, halibut, weakfish, bluefish, blackfish, flounder, striped bass, red snapper.
Vegetables	Two green vegetables daily, as spinach, peas, beans, beet tops, asparagus, string beans or beets, carrots, squash, boiled mushrooms, stewed tomatoes, stewed celery, boiled okra. Not prepared or eaten with butter or cream.
Salads	Lettuce with stewed fruits or with cooked vegetables. Liquid petrolatum or lemon dressing.
Bread	As above.
Beverages	As above or a small glass of buttermilk.
Desserts	Stewed fruits, as peaches, pears, plums, cherries, grapes, prunes, pineapple or apple sauce. Gelatin, fruit ice, prune soufflé.
Avoid	Butter, cream, meat fats, grease, gravies. All foods fried, hashed or warmed over. Inner organs, as brain, liver, kidneys, sweetbread. All rich and highly seasoned foods, creamed food and foods prepared with cream, butter or eggs. Oils, as olive oil, cod liver oil, salad dressings. Heavy cheeses, nuts, olives, spiced foods. Candies, cakes, pies, pastries, chocolate, coconut. Aid food condiments, alcohol, smoking. Rough foods, as cabbage, cucumbers, pickles, bran and whole wheat products. With digestive disturbances, salads, raw fruit and raw vegetables should be omitted; all vegetables should be puréed.

DIET 2—Low Cholesterol, Low Fat, High Caloric

Breakfast

Fruits	Orange juice, baked apple, apple sauce or stewed fruit, as prunes, pear, peaches with milk and sugar.
Cereals	Cooked as farina, cream of wheat, wheatena, oatmeal, rolled oats with milk and sugar.
Eggs	One egg may be taken three times weekly, soft boiled or poached on toast with 2 slices of lean crisp bacon.
Bread	Two slices toasted white bread, rolls or corn bread with jam, marmalade or jelly.
Beverages	Milk, half milk and coffee, Sanka coffee, Postum or weak tea with 1 teaspoonful of cream and 1 lump of sugar.

Lunch and Dinner

Soups	Small portions of tomato, chicken, plain vegetable, gumbo or oxtail.
Meats	Lean meat or fish at least once daily. Meats: Roast beef, chicken, lamb or ham. Fish: Cod, trout, weakfish, whitefish, bluefish, flounder, striped bass, blackfish, red snapper.
Vegetable	Potatoes, baked, mashed or boiled or sweet potato, macaroni or spaghetti, spinach, peas, beans, beet greens, beets, carrots, squash, asparagus, boiled mushrooms, string beans, stewed tomatoes or celery. Not to be eaten or prepared with butter or cream.
Salads	Lettuce with stewed fruits, canned fruits or cooked vegetables with liquid petrolatum or lemon dressing.
Bread	As above.
Beverages	As above or malted milk.
Desserts	Puddings, as bread, tapioca, cornstarch or sago. Stewed fruits, as peaches, pears, plums, prunes, apple sauce, baked apple with milk and sugar. Gelatin, junket, baked banana, plain cake.
Intermittent feedings	A glass of milk, malted milk or Ovaltine to be taken at 10 a. m., 4 p. m. and at bedtime. With zwieback, plain or arrowroot crackers, breadsticks or toast, jelly or marmalade may be added if desired.
Avoid	Foods listed to be avoided in diet 1.

DIET 3—Bland, Low Cholesterol for Gastric Hyperacidity

Breakfast

Fruits	Stewed or canned, as peaches, pear, apricots, prunes. Baked apple, apple sauce, no sugar added.
Cereals	Cooked as farina, cream of wheat, wheatena, strained oat meal with milk and little sugar.
Eggs	One egg, soft boiled or poached on toast with a slice of lean crisp bacon if desired.
Bread	One slice of toasted white bread with marmalade or jelly.
Beverages	Milk, Postum, weak tea with milk and sugar.

Lunch and Dinner

Meats	Lean meat or fish twice daily, not fried. Meats: Roast beef, chicken, lamb, ham, chopped meat. Fish: Cod, trout, weakfish, whitefish, blackfish, flounder, striped bass, haddock, pike.
Vegetables	Potatoes, baked, boiled or mashed. Macaroni or spaghetti, no sauce. Vegetables puréed only, as carrots, beet, spinach, peas, beans, asparagus, tips, squash.
Salads	Lettuce with stewed fruits or cooked vegetables. Liquid petrolatum dressing.
Bread	As above.

Beverages	Milk or malted milk
Desserts	Puddings as cornstarch bread tapioca sago Stewed fruits as pears peaches prunes cherries Gelatin Baked banana
Avoid	Foods listed to be avoided in diet 1

DIET 4—*High Cholesterol, Low Caloric*

Breakfast

Fruits	Orange juice or stewed fruits as peaches pears prunes Baked apple apple sauce with cream and sugar
Eggs	One egg (oft boiled or poached) may be taken daily with a slice of lean crisp bacon
Bread	A half slice of toasted white bread with butter
Beverages	Milk tea coffee or Postum with cream and sugar

Lunch and Dinner

Soups	A small portion of consommé vegetable oxtail pea or tomato soup may be taken once daily
Meats	A small portion of lean meat or fish twice daily. Meats Chicken roast beef, lamb chop leg of lamb mut- ton or veal Fish Cod trout halibut weakfish whitefish flounder Brains liver kidneys or sweetbreads three times weekly
Vegetables	Two at each meal (preferably green) as spinach asparagus string beans beet green carrots squash stewed tomatoes celery or okra
Salads	Lettuce with canned or stewed fruits Liquid petrolatum
Bread	As above
Beverages	As above
Desserts	Stewed fruits as peaches pears pineapple cherries Gelatin stewed fruits apple sauce prune soufflé
Avoid	All foods fried hashed or warmed over Rich and highly season foods spices condiments Heavy cheeses nuts olives pickles Candies cakes pies pastries chocolate cocoa Rough foods as cabbage cucumbers, bran and whole wheat products With digestive symptoms salads raw fruits and raw veg- tables should be omitted all vegetables should be pureed

DIET 5—*High Cholesterol High Caloric*

Breakfast

Fruits	Orange juice stewed or canned fruits or prunes Baked apple apple sauce with cream and sugar
Cereals	Cooked as wheatena cream of wheat farina oatmeal with cream and sugar
Eggs	Two soft boiled or poached eggs daily with two slices of lean, crisp bacon
Bread	Two slices of toasted white bread with butter
Beverages	Tea (weak) milk Postum with cream and sugar

Lunch and Dinner

Soups	Consommé creamed tomato vegetable oxtail
Meats	A small portion of lean meat or fish Meats Lamb chops roast lamb leg of lamb chicken or other fowl roast beef steak Fish Shad trout halibut weakfish whitefish pike flounder bass blackfish Brains liver kidneys or sweetbreads three times weekly
Vegetables	Baked boiled or mashed potato with cream or butter or macaroni or spaghetti Spinach asparagus carrot beet beet greens squash boiled mushrooms stewed tomatoes
Salad	Lettuce with stewed fruits or cooked vegetable Mayon- naise liquid petrolatum or kumardine
Bread	Two slices toasted white bread with butter
Beverage	As above
Desserts	Custard pudding as rice tapioca bread Stewed fruits or canned fruits with crackers Baked apple apple sauce with cream and sugar Flan cake ice cream junket gelatin
Olive oil	A teaspoonful of olive oil to be taken a half hour before each meal this amount is to be increased a teaspoonful each week until a tablespoonful is taken before each meal
Intermittent feeding	A glass of milk malted milk as nog or Ovaltine to be taken at 10 a m 4 p m and at bedtime with zakusack cracker toast or breadstick Butter or jam if desired
Avoid	Foods listed to be avoided in diet 4

CONCLUSION

If due attention is given to the physiologic disturbances responsible for the symptoms of which the patient complains and if physiologic principles are kept in mind during the treatment improvement is possible in the present medical management of diseases of the gallbladder and biliary tract

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ABSTRACT OF DISCUSSION

DR SIDNEY A. PORTIS, Chicago It is important to devise some medical measures for handling these patients so that they get symptomatic relief. It is difficult to evaluate very early in the disease which gallbladders will respond to medical management and which may need surgical intervention. The test of time is probably the best method of evaluating which should be the course. Certain patients seem to respond better to very high carbohydrate and low fat diets, but in the undernourished a moderate amount of fat may be definitely indicated. I have found a large number of overweight obese patients, particularly women around 35 to 45, suffering from an associated hypothyroidism. Routine basal metabolic tests in these women have shown a rate of minus 15 20 25 or 30. The addition of small doses of thyroid extract to the medication seems to be particularly effective in raising the metabolism. It is well known that in hypothyroidism there is a sluggish movement of the gastro-intestinal tract. There is a group of patients who have a sensation of nausea, vertigo, fullness and distention, which seem to be related to the movements more of the first and second portion of the duodenum. I have found that hydrochloric acid may be particularly effective in promoting the movements of the upper intestinal tract in these patients in spite of the fact that they have normal, sometimes slightly increased and sometimes slightly decreased acidity in the stomach. Many of these patients have become comfortable under this management. The important cardinal feature to remember in gallbladder disease is that one must protect the liver function. I know of no better method of protecting liver function than by the use of carbohydrates. I could find no appreciable elevation of blood cholesterol after feeding patients 3 Gm of cholesterol and concluded that the reason for this presumed hypocholesteremia was the inability of the liver to form the cholesterol ester fraction from the cholesterol. This was first brought out by Epstein, working at the Mount Sinai Hospital.

DR C. B. WRIGHT, Minneapolis I should like to ask whether there was any definite evidence that attacks of cholecystitis were prevented by this method of treatment.

DR W. D. MAYR, Detroit I should like to ask whether the authors use nonsurgical drainage of the gallbladder at all in their treatment.

DR F. W. MULLSOW, Cedar Rapids, Iowa What evidence do the authors have that bile salts stimulate the liver? The reason I ask is that I am circularized by drug houses to buy bile salts for all kinds of gastro-intestinal disturbances and especially in gallbladder disease. I can't find much evidence of bile salts helping in constipation. I don't know that it stimulates the liver.

DR CARL H. GREENE, New York It is our impression that in many cases duodenal drainage, perhaps by relieving biliary stasis, is of therapeutic value. Dr Wright's question as to the number of attacks of cholecystitis that have been prevented is difficult to answer because of the silent gallstone. I don't think that anybody can explain all the factors that determine why the gallstone is silent or why it causes symptoms. One can show experimentally by giving bile salts intravenously in an animal with a bile fistula or giving bile salts orally to animals with a bile fistula that it results in an increase of flow of bile with secretion of the given bile salts after four to six hours. On the other hand from the clinical standpoint the relation of the flow of bile to such factors as constipation is difficult to answer. Most of the pharmaceutical houses recommend tablets that are essentially homeopathic so far as the dose is concerned. The matter of the clinical use is by no means settled and requires further work for its elucidation. The point that Dr Thiss and I want to emphasize is that by taking advantage of the known physiologic facts and by the individualization of the patient from the standpoint of idiosyncrasy and interpretation of the clinical syndrome the methods of medical management can be improved. It is to be hoped that it will be possible to improve methods still further because it is only by early diagnosis and treatment that I see any prospects of the prevention of gallstones. Until that question is solved the medical treatment of biliary tract disease cannot hope to supplant the surgical treatment.

THE PRACTICAL APPLICATION OF EXCRETORY (INTRAVENOUS) UROGRAPHY

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The name of this new method of urographic visualization, which has become one of the most valuable aids in clinical diagnosis, deserves consideration. Since its inception it has been most often referred to by the term "intravenous urography," which was adopted to distinguish it from "cystoscopic" or "retrograde urography." It has also been referred to as "descending" or "excretion urography" by European observers. "Excretory urography" would seem the logical term since it is physiologically descriptive and in view of recent and portending advances in oral administration, would be quite acceptable.

The members of the medical profession have been inexcusably slow in availing themselves of the opportunities offered by excretory urography in the diagnosis of abdominal lesions. Judging from the frequent requests made by patients for excretory urography rather than cystoscopy, it might be inferred that laymen are more familiar with the method than some physicians. It should and probably will be employed in the near future as a routine method in the diagnosis of abdominal conditions. Probably the greatest obstacle to its general employment has been the problem of urographic interpretation. This will, no doubt, always limit its general use largely to fields in which changes in the outline of the renal pelvis will be so extensive that the lesion is easily recognized. Nevertheless, many of the deformities of the renal pelvis will soon be roentgenologically standardized in a manner similar to lesions of the alimentary tract, so that any one with roentgenographic experience should be able to interpret most urograms with a fair degree of accuracy. Errors in interpretation undoubtedly will arise, and the necessity for correlation with cystoscopic and other data will often be present. However, excretory urography will no doubt make it possible for the general clinician to recognize many lesions that would otherwise be overlooked or that were formerly discovered only with the aid of complicated urologic apparatus. The excretory urogram will be of greatest practical value to clinical diagnosis in (1) determining the presence of stasis in the renal pelvis or ureter, (2) aiding in interpretation of shadows in the upper part of the urinary tract, and (3) giving a fairly accurate estimate of renal function.

The change in attitude among urologists toward excretory urography is of considerable interest. Following the pioneer work of Rowntree and his associates, the practical application by Roseno¹ and by Swick,² and the clinical contributions by von Lichtenberg and Swick,³ the method at first was received with skepticism and apprehension. However, as its clinical value was demonstrated their attitude changed completely, and now there are a few urologists who go so far as to

claim that the cystoscope is no longer necessary in the diagnosis of renal lesions. It is true that excretory urography has replaced the former methods of urologic investigation to some extent. It should be stated, however, that retrograde urography is still of great value particularly in the recognition of minor deformity, and has supplied data that could be acquired in no other way. The data obtained from the combined use of excretory and retrograde urography will often give more complete information than when either method is used alone. On the other hand, it must not be inferred that visualization of the renal pelvis and ureter will give all the data that are necessary to complete clinical appraisal. Other than accurate urographic interpretation, often there are data of equal importance which only an experienced urologist can supply.

Excretory urography is frequently disappointing because of inadequate visualization of the pelvis and calices. Often in a case in which clear visualization is most needed the pelvic outline is so dim and uncertain as to render exact interpretation impossible. Failure of visualization may be due to a lesion in the kidney, rapidity of excretion and excessive peristalsis or a technical factor, and its cause may be difficult to determine. Complete failure of visualization on one side in repeated films must be interpreted as indicative of renal dysfunction. It is of importance to determine whether the dysfunction is secondary to some temporary lesion or irritant that can be corrected or whether the renal tissue is actually destroyed. With failure of visualization it is often advisable to corroborate evident dysfunction by means of cystoscopic inspection of the ureteral orifice and with the aid of dye tests. An approximate appraisal of the pelvic outline can be obtained often by piecing together the combined data obtained from several films taken at different intervals. One of the dangers of dim visualization, however, is that the interpreter is likely to take too much for granted and assume a condition to be normal or abnormal from insufficient data. The mere fact that pelvises are visualized, even though incompletely, will often be sufficient to demonstrate that function remains to the kidney. When advanced disease of the kidney has been surmised from the preliminary clinical or cystoscopic data the value of visualizing a comparatively normal pelvic outline, even though incompletely, is self evident.

Fairly clear visualization on one side and poor visualization on the other, does not necessarily indicate a lesion in the latter side. In fact, a pelvis that is incompletely visualized may easily be confused with deformity, and in the hands of an inexperienced observer more harm than good may be done.

A difference in the degree of visualization of the two kidneys is often observed when no other evidence of change is apparent. There may be also a difference in the time of visualization, one pelvis being much better visualized in the first film and the other in a later film. There also is variation in the time of emptying. When the latter is very much retarded it usually indicates stasis resulting from actual obstruction, or from atonic changes caused by an active lesion or one previously present but now healed. Exact interpretation of moderate delay in visualization may be difficult.

HYDRONEPHROSIS

Excretory urography permits clinical recognition of hydronephrosis by means of a comparatively simple method and as a result many cases of hydronephrosis

From the Section on Urology, the Mayo Clinic.
Read before the Section on Urology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.
1. Roseno, A. Studien zur intravenösen Pyelographie. Verhandl. d. deutsch. Gesellsch. f. Chir. 8: 431-433, 1928. Die intravenöse Pyelographie. Arch. f. klin. Chir. 157: 64-66, 1929.
2. Swick, Moses. Darstellung der Niere und Harnwege im Röntgenbild durch intravenöse Einbringung eines neuen Kontraststoffes des Uroselectans. Klin. Wchnschr. 8: 2087-2089 (Nov.) 1929. Intravenous Urography by Means of Uroselectan. Am. J. Surg. 5: 405-414 (Feb.) 1930.
3. von Lichtenberg, A. and Swick, Moses. Klinische Prüfung des Uroselectans. Klin. Wchnschr. 8: 2089-2091 (Nov.) 1929.

are being diagnosed by the general practitioner which otherwise would be overlooked. Recognition of the deformity in the outline of the renal pelvis caused by well defined hydronephrosis should not be difficult, even to a physician who has had limited experience in roentgenographic interpretation. Although it is true that there may be some difficulty in the interpretation of slight pyelectasis (fig 1) and in complicating deformities, there are few obstacles to general interpretation in most cases in this field.

One of the advantages of the excretory urogram is the ability it gives to compare the outline, time of appearance and disappearance, and degree of visualization of the two renal pelvises, these data are of considerable importance in determining whether minor degrees of stasis are present. In a large number of cases, pyelectasis is bilateral. Although it is usually much greater on one side, there will often be evidence of a variable degree of pyelectasis or other deformity on the other side. It occasionally happens that, although the symptoms will be referred to one kidney, the degree of pyelectasis in the other side may be of equal or greater extent. Visualization of the dilated pelvis may be retarded and dim in the early films and completely visualized only in later films. With extensive hydronephrosis, visualization of the pelvis is often retarded and may be inadequate even in the late films. At times, only a few dilated calices are outlined, and in some cases no evidence of the injected dye is visible until one or two hours after injection. With rapid excretion of the dye and unobstructed drainage while the urogram is being made, the complete extent of the hydronephrosis may not be visualized, and in such cases the pyelectasis may be more completely visualized by the retrograde method. In all doubtful cases it is advisable to visualize the pelvis by both retrograde and excretory urograms. In the course of routine urography, minor degrees of pyelectasis are often observed which have caused no symptoms and apparently are of no clinical significance.

Excretory urography gives the surgeon an excellent opportunity to follow the results of operation on the hydronephrotic pelvis. The changes in the pelvic outline visualized subsequent to plastic operation are often of considerable interest and give a valuable indication of the results.

RENAL PTOSIS

Although the presence of renal ptosis usually can be determined in the course of abdominal palpation, the comparative degree of ptosis and of the excursion of both kidneys in varying positions can be determined more accurately in the excretory urogram. In the course of abdominal examination, evidence of ptosis of only one kidney often is found whereas in the excretory urogram ptosis of equal degree is often found on both sides. Renal ptosis usually can be determined without the aid of urography, but not the indications for operation. It is now generally recognized that unless there is definite evidence of renal stasis nephropexy is usually not indicated. Excretory urography offers an ideal method for determining minor degrees of stasis. Comparative delay in time and degree of visualization or in emptying on the side involved may be of considerable diagnostic importance. Should these data be found on the side opposite to the localization of pain as occasionally happens the situation may be confusing. It may be surmised that if excretory urography is employed in all cases of renal ptosis in which

surgery is contemplated, in order to determine the comparative degree of ptosis and the presence of stasis, only few operations for nephropexy will be performed.

RENAL LITHIASIS

Excretory urography is probably more often of value to the general practitioner and surgeon in the diagnosis and study of lithiasis than in any other field. The excretory urogram permits identification of shadows seen in the renal area in the flat film. It also establishes their intrarenal situation and allows visualization of coincident complications and of the relative functional capacity of either kidney. In fact, all the data necessary for operation are evident without cystoscopic examination in the majority of cases of renal lithiasis, and with these data the surgeon can proceed with assurance. However, many cases of renal stone remain in which the cystoscope will be of value. When there is a history of or evidence of gross hematuria or pyuria,



Fig 1.—Excretory urogram showing bilateral pyelectasis more marked on left side.

cystoscopy usually will be advisable in order to determine the source. If there is a shadow suggestive of unilateral renal calculus visible in the flat film and there is evidence of pyuria or hematuria, it does not necessarily follow that the latter has its origin in the kidney containing the stone. Not only will the other kidney have to be excluded from consideration, by cystoscopy, but the lower part of the urinary tract as well. Some difficulty may arise in interpreting the nature of the original shadow when the excretory urogram gives no evidence of pyelectasis or stasis. This may occur if stones are of large size and of long standing. If the shadow is small it may be in line with the pelvis but may not be visible within the pelvic shadow. In such cases it is well to repeat the films at different angles and with a lateral exposure. In some cases, cystoscopy may be of value. As a rule however difference in the degree of visualization of the two pelvises with evidence of renal stasis in the affected kidney, difference in time of appearance and disappearance of visualization, and pyelectasis or ureterectasis on the affected side will give

the necessary diagnostic data. It is surprising, in the course of routine excretory urography in cases of lithiasis, how often some evidence of disease is found in the other kidney. Minor degrees of pyelectasis or ureterectasis frequently are visualized as a result either of a previously existing stone or of infection.



Fig 2—Excretory urogram showing deformity accompanying polycystic kidney

ABDOMINAL TUMOR

Among the problems in diagnosis most commonly observed in general practice is the identification of a tumor palpated in the upper lateral part of the abdomen. In the absence of other diagnostic data it may be impossible to identify the tumor by the methods usually employed in physical diagnosis. The excretory urogram often will give sufficient data either to identify it as renal or to exclude the possibility of its being renal. Visualization of filling defects in the pelvic outline, or of elongation and deformity of involved calices or failure of visualization on the side of the abdominal tumor is usually sufficient to justify the inference that the tumor is intrarenal. On the other hand a normal pelvic outline usually will exclude the possibility of the tumor being renal. It should be emphasized, however, that, if the details of the calices are not clearly visualized, exact interpretation is impossible and cystoscopic data, together with a retrograde urogram are necessary. Error in the diagnosis of renal tumor is easily made by trying to interpret an excretory urogram in which the details of the calices are inadequately visualized. In cases of doubt, a retrograde urogram should always be made.

Excretory urography, when feasible, is distinctly preferable to retrograde urography in the diagnosis of polycystic kidney (fig 2), because it obviates the danger of infection secondary to ureteral catheterization or retrograde urography. Although deformity suggestive of polycystic kidney is often clearly visualized in the excretory urogram, in many cases the visualization is inadequate for interpretation, either because of abnormal excretion or because of subnormal renal

function. It has been my experience that, when the concentration of urea is more than 50 or 60 mg in each 100 cc of blood, visualization is unsatisfactory.

RENAL TUBERCULOSIS

The question often arises, How far can physicians rely on the evidence given by excretory urography in the diagnosis and localization of renal tuberculosis? As a rule, renal tuberculosis will cause some degree of deformity in the excretory urogram. Although the abnormality may not be typical of renal tuberculosis, nevertheless, with the aid of other evidence such as the presence of acid-fast bacilli in the catheterized urine, a diagnosis frequently can be established. When any of the following signs are observed in the excretory urogram, namely, absence of or marked delay in visualization (fig 3), irregular pyelectasis or ureterectasis, failure of visualization of one or more calices, with irregularity of the pelves, or definite necrosis on one side and a normal pelvis and ureter on the other, the diagnosis of renal tuberculosis often can be inferred. Often, subsequently, a retrograde urogram will give visualization of doubtful deformity much more clearly or will disclose deformity otherwise not seen. The question may be raised whether the particulars derived from an excretory urogram alone would be sufficient to warrant removal of the kidney involved without cystoscopic data. It should be stated that normal visualization on one or both sides would not exclude renal tuberculosis. On several occasions I have been able to find bacilli of tuberculosis and a few pus cells in the catheterized specimen of urine from a kidney which,



Fig 3—Excretory urogram showing right renal tuberculosis. There is a difference in renal visualization; there is a filling defect in the upper calices of the right renal pelvis.

from excretory urographic evidence, would be inferred to be normal. Although it is usually advisable to corroborate the urographic evidence of a normal kidney on the opposite side by means of ureteral catheterization, nevertheless if for any reason cystoscopy would be difficult or impossible, a physician could, with a relative degree of assurance, advise removal of the kidney involved.

The possibility of error in inferring from an excretory urogram that a kidney is normal is illustrated by a case in which the patient presented himself because of indefinite backache, with no symptoms suggestive of disease of the urinary tract. A few pus cells were found in the urine and, when the sediment was stained,

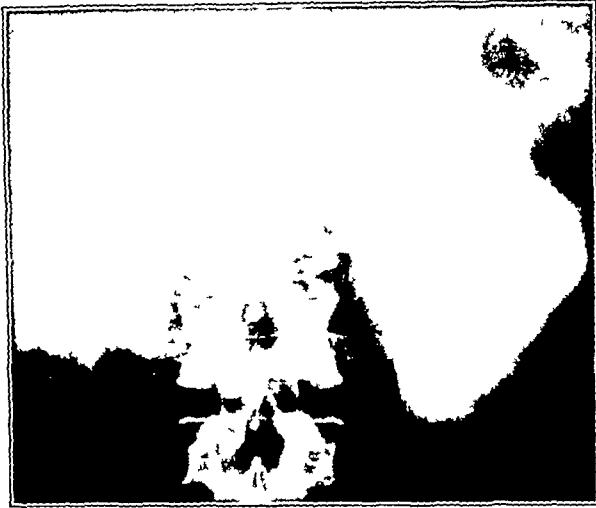


Fig 4—Excretory urogram showing complete duplication of left renal pelvis, with pyelectasis in both pelves, more marked in the lower

acid-fast bacilli or other bacteria were not seen. The general examination, including roentgenograms of the urinary tract and tests of renal function, was negative. An excretory urogram gave an average visualization of both pelves, calices and ureters, which were interpreted as being normal. A diagnosis was made that the upper part of the urinary tract was normal. On subsequent examination a cystoscopic examination was made because of the persistence of a moderate amount of pus in the urine. In the catheterized specimen from the right kidney, a few pus cells were present and the stained sediment revealed a few acid-fast bacilli. It is evident, therefore, that the patient was suffering from tuberculosis of the right kidney, which would have escaped detection if excretory urography had been depended on for diagnosis.

MISCELLANEOUS

Among other conditions in which excretory urography is of diagnostic value should be mentioned the complications of pregnancy.⁴ Various observers have employed this method as a routine without apparent injury to the patient and have been able to find evidence of secondary lesions in the urinary tract in a surprisingly high percentage of cases. Excretory urography is often disappointing in the diagnosis of pyelonephritis since the deformity of the renal pelvis accompanying pyelonephritis may be so insignificant that it will not be adequately visualized. In many cases however as a result of atony or of secondary obstruction ureterectasis or pyelectasis will be visualized. Minor changes in the outline of the calices resulting from a previous infection now dormant are often observed in routine urography. With chronic unilateral pyelonephritis however the resulting deformity is often marked. It may be recognized by unilateral deformity such as incomplete visualization or cicatricial deformity

of the pelvis with absence of one or more calices. With atrophic pyelonephritis the outline of the pelvis and calices is in keeping with the degree of renal atrophy, although minor pyelectasis may also be present. The existence of anomaly of the upper part of the urinary tract, such as renal fusion, duplication of the pelvis (fig 4) and ureter, renal dystopia, incomplete rotation and agenesis, will undoubtedly be discovered much more often than formerly. Since such anomaly is often complicated by some secondary lesion, the practical importance of preoperative visualization is self evident.⁵ Excretory urography should be employed as a routine in cases in which injury to the urinary tract is suspected. Although reflex inhibition of excretion following severe injury may interfere with interpretation, nevertheless the character and extent of rupture of the kidney may often be visible in the urogram. Rupture of the bladder may also be determined by the method better than in any other way and without the dangers of secondary infection.

RENAL LESIONS COMPLICATING VESICAL DISEASE

When lesions such as neoplasm, diverticulum, stone or prostatic abnormality involve the bladder, secondary complications often occur in the kidney and ureter and may be determined only by means of excretory urography. In fact, its employment as a routine is advisable in all surgical lesions involving the bladder and urethra, even though symptoms suggesting involvement of the upper part of the urinary tract may not be present. Unilateral absence or reduction of renal function, pyelectasis and ureterectasis are often found when

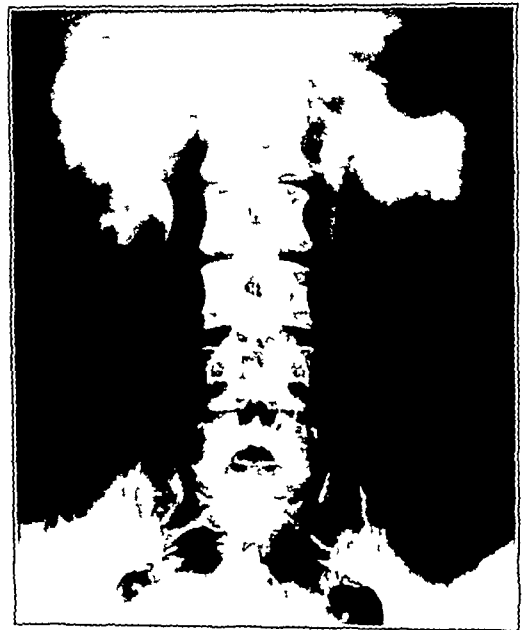


Fig 5—Excretory urograms showing stone in left ureter, there is evidence of pyelectasis and renal atrophy.

least suspected. Should a vesical neoplasm surround a ureteral orifice, it is of primary importance to determine, before operation, the condition of the ureter and kidney involved. When cystectomy and reimplantation of the ureter are contemplated the value of preliminary visualization of the ureter and renal pelvis is self evident.

Lee, H. I., and Vengert, W. F.: Effect of Pregnancy on the Urinary Tract. *Am. J. Surg.* 1932.

5 McKenna, C. M.: Traumatic Lesions of the Urogenital Tract. *J. Urol.* 7: 93-101 (Jan.) 1923.

EXCRETORY URETEROGRAM

Visualization of the ureter in the excretory urogram is often disappointing. Although the normal ureter usually is not visualized in its entirety, it occasionally will be outlined completely. As a rule visualization of the ureter is fragmentary, varying with the amount of iodized urine contained, and with systole and diastole. More commonly, the upper third of the ureter only is visualized although in subsequent films the other portions of the ureter particularly the lower third, can be seen. For this reason it is often necessary to assemble the data from several films in order to obtain an adequate idea of the ureteral outline.

Attempts have been made to visualize accurately the ureter by various methods. Compression bags placed over the lower part of the ureter a few minutes prior to exposure have often proved to be of some assistance. It is advisable to have the patient placed first in the Trendelenburg position and later in order to visualize the lower part of the ureter, to have him sit up with the legs flat on the table for five or ten minutes prior to the second or last film. In the later films the lower end of the ureter is sometimes visualized, apparently because of stasis resulting from filling of the bladder. It is surprising how often marked ureterectasis can be overlooked entirely in the excretory ureterogram and it may be necessary to resort to retrograde ureterography with the aid of multiple or bulb catheters.

Excretory urography is frequently disappointing in the identification of suspected shadows in the area of the ureter (fig 5). Unless there are actual obstruction and retention of urine in the ureter at the time of exposure there may be no evidence of ureterectasis and even complete failure of visualization of the ureteral outline. When the shadow is in the lower end of the ureter the bladder should be emptied before the last films are taken, otherwise the vesical outline will completely overshadow the outline of the adjacent ureter.

Excretory urography should be of great value in determining the existence of actual stricture of the ureter which a few years ago was thought to be of such frequent occurrence. Excretory urography will visualize ureterectasis, which must be present if actual stricture is present. There may be some difficulty in distinguishing between atonic and obstructive dilatation, but as a rule the localized area of constriction, with ureterectasis immediately above it, will identify actual obstruction. If an excretory urogram was made as a routine in cases in which stricture of the ureter was suspected only few patients would be subjected to ureteral dilation by the conscientious urologist.

Similarly, many so-called kinks in the ureter, which formerly have been given a far more important place by urologists than they merited, have disappeared in repeated excretory urograms. It is evident that such angulations were often caused by spasm secondary to irritation by a catheter. Other apparent kinks exist temporarily as the result of postural, respiratory or other physiologic and anatomic conditions. When ureteral angulation persists in the excretory urogram and in spite of postural change and is accompanied by urographic evidence of stasis, it may be regarded as of pathologic significance. It is of interest that ureteral spasm at the ureteropelvic juncture which often accompanies renal stone will many times be visible in the excretory urogram.

The excretory ureterogram may also be of great value in determining the postoperative condition of the ureter. It offers a simple method of determining the

existence of injury to the ureter after operations on the female pelvic organs. It may be the only method of ascertaining the functional results or complications following transplantation of the ureters into the sigmoid.

EXCRETORY CYSTOGRAPHY

The bladder frequently will be visualized coincidentally in the late films made in the course of excretory urography. These data, which are available as a by-product, are frequently of considerable clinical use. A coincident vesical neoplasm, diverticulum or other deformity is often visualized, which might otherwise have been overlooked. Although the bladder is not always completely filled, enough evidence of deformity when present, is usually seen to permit of diagnosis. With failure of visualization of the upper part of the urinary tract because of intestinal flatus, poor preparation, roentgenologic technic or physiologic or anatomic circumstances, the presence of the excreted medium in the bladder may be the only evidence available of adequate renal function. The excretory urogram may also be of value in making an approximate estimate of the amount of residual urine in the bladder when it is impossible or inadvisable to employ a urethral catheter.

SUMMARY AND CONCLUSIONS

Although the foregoing data are so condensed that they constitute but a summary of the information available by means of excretory urography, nevertheless the following may be emphasized:

1 Excretory urography should be and will be employed as a routine in the diagnosis of abdominal lesions.

2 Its greatest handicap is interpretation, which will be so standardized as to permit the method to be more generally employed.

3 Its greatest value will be in determining the presence of stasis in the renal pelvis or ureter and in interpretation of shadows in the upper part of the urinary tract, and giving fairly accurate estimates of renal function.

4 Excretory urography will also be used to a less extent in the recognition of renal tumor, tuberculosis and anomaly.

5 It will always be an invaluable aid to the urologist in conditions in which cystoscopy and ureteral catheterization are impossible or inadvisable.

6 It should be of much help in determining the presence or, rather, the absence of stricture of the ureter.

7 It should also be of great help in determining the necessity for the surgical treatment of renal ptosis.

8 The data that it gives should be complementary to other urologic data and in only a limited field will it entirely replace them.

Possibilities to Unassisted Eyes—Our final opinion of course in any case is based upon a compounding of sense data and an analysis by the mind of all the information we have collected by all the means at our disposal. The more accurately however we observe with our special senses the more judicious will our choice of other methods be and the more accurate the final opinion. Do not think that the few illustrations I have given you are intended to do more than indicate the range of possibilities open to your unassisted eyes, hands, ears and nostrils. Your daily life in clinical medicine will furnish you with others in plenty, some which are old and familiar and others which you will reveal to yourselves.—Ryle, J. A. *The Training and Use of the Senses in Clinical Work*. *Guns Hosp Gaz* 47:421 (Oct 28) 1933.

MOSES SWICK, MD
NEW YORK

The oral administration in man has also yielded satisfactory results. Of twenty-five cases approximately 50 per cent showed good diagnostic urograms from ninety to 135 minutes after administration. From 10 to 15 Gm of the substance dissolved in approximately 75 cc of simple syrup was given by mouth. No reac-

tions were ever noted. The only subjective sensation recorded is the salty aromatic taste of the solution. Forty-five minutes after the intake of the solution, the patient is placed on the x-ray table, a moderate degree of compression is applied, and exposures are made sixty, ninety, 120 and 150 minutes after the ingestion of the substance. Further investigations with the oral



Fig 4—Intravenous urogram. Bilateral renal calculi with very little effect on the pelvis and calices. The left pelvis and calices are larger than those on the right side.

administration are in progress. At the present time it is my opinion that the results by the oral route will not be as consistently good as those given intravenously.

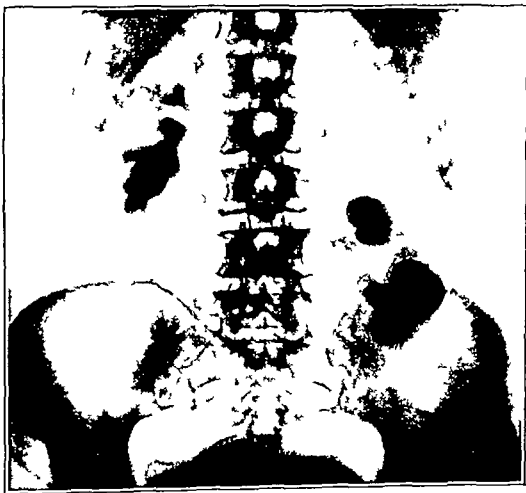


Fig 5—Intravenous urogram. Left hydronephrotic dystopic nonrotated kidney with calculus in its lower pole. Right double pelvis, double ureter with dilatation of the lower half. The chief complaint was a tender mass to the left of the umbilicus and hematuria.

PREPARATION OF THE PATIENT

The patient is prepared as for any roentgen urinary examination: castor oil the night before, no fluids during the night, and nothing by mouth in the morning.

IMPORTANCE OF COMPRESSION

Of importance in obtaining clearly defined and readable excretory urograms is the application of a mod-

erate degree of compression over the region of the urinary bladder by means of an air-inflated balloon held in place by the canvas sheet of the compressing apparatus. The balloon is applied in the midline, just above the symphysis pubis, immediately after the completion of the injection, and is maintained without disturbance for the entire period of the three exposures. It is felt that an artificial dilation of the urinary tract with the aid of compression is not produced when normal tonic conditions prevail.

Further studies with related substances and with the administration of the mono-iodobenzoate and diiodobenzoate of sodium in conjunction with glycine by the intravenous and oral routes are being continued.

GENERAL CONSIDERATIONS

Excretion urography should be viewed only as one of the aids in urologic diagnosis and as such not without its limitations. This method cannot entirely supplant cystoscopy or retrograde pyelography, and it must be considered in conjunction with other means of inves-

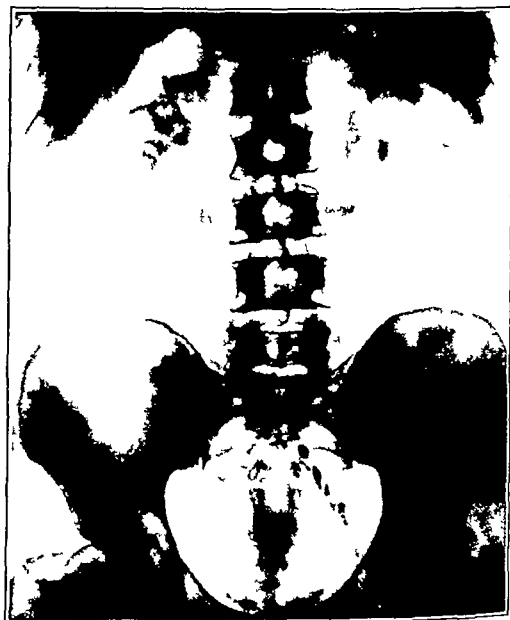


Fig 6—Oral urogram showing normal urinary tracts. Iodized poppy seed oil seen in the bony pelvis is the result of injection of a fistulous tract.

tigation in each individual case. When doubt exists, cystoscopy and retrograde pyelography should be employed. The latter procedures too, despite their years of existence, are not always fool proof. The following example is illustrative.

A patient with a history of bilateral renal pain associated with hematuria was found on cystoscopy, to have good indigo carmine excretion from both sides, 20 cc retention in the left kidney pelvis, but none in the right, as determined by aspiration through the catheter, which was thought to be in the pelvis. Accordingly, a left retrograde pyelogram—the side with retention—was made, abnormality of the right urinary tract not being expected. But the intravenous urogram visualized a hydronephrosis of the right renal pelvis, the slight dilatation of the left renal pelvis resembling that seen by the retrograde route, was found to be incidental to a stone in its lower ureter.

Because the mechanism of this type of urographic visualization is based on excretion, one should think in terms of renal function as it pertains to this method.

From studies of excretion, it is observed that the normally functioning kidney possesses the ability to excrete urographic substances in high concentration within a short period. This may be characterized as the thrust-excretion ability of the normally functioning kidney. It is obvious that, in the case of a poorly or nonfunctioning kidney, when the concentrating power is impaired, poor or no visualization will be found, since a certain concentration of the radiopaque element is necessary for roentgenologic visualization. Broadly speaking, then, it may be stated that visualization, poor visualization or no visualization is dependent on renal and extrarenal factors. When, however, the additional mechanism of obstruction is present (reservoir mechanism) visualization may be had, although the height of excretion requisite under normal circumstances is absent, provided excretion takes place. Thus, in some cases of hydronephrosis, despite the presence of comparatively little intact renal tissue, good visualization may still be encountered. This brings up an important consideration, namely, in cases of hydronephrosis, the presence of functioning renal tissue, as evidenced by the radiologic observations, is no quantitative criterion nor one for determining the type of therapeutic procedure. The latter will depend on the individual case and the pathologic anatomic status, as well as on the particular approach of the physician or surgeon to the case in question.

Further, it is important to point out that the functional activity of the kidney may be temporarily inhibited and that the mere nonvisualization of the urinary tract at a given examination does not necessarily signify permanent renal damage.



Fig. 7—Oral urogram in a patient with congenitally absent left kidney complicated originally by a ureteral stone who was operated on the operation followed by a stricture and ulceration of the ureter by a recurrent stone. Finally a permanent lumbar uretero-tomy was performed. The urogram shows dilatation of the calyces, pelvis and upper ureteral stump. A cul-de-sac is seen situated in the region of that stump.

On the other hand it should also be stressed that the mere nonvisualization of the upper urinary tract incidental to the functional anatomic derangement of the kidney parenchyma may in itself be of great assistance as a means of localization of the disease and in diagnosis when considered together with other clinical data.

Cases of calculous pyonephrosis, tuberculous pyonephrosis, infected hydronephrosis and tumors of the kidney have been so diagnosed with great regularity when viewed clinically in their entirety. In addition, one gains an insight into the functional and anatomic status of the contralateral side, so essential in the evaluation of the individual as an operative risk.



Fig. 8—Trapped right hydronephrotic kidney due to aberrant vessels at the ureteropelvic junction. Ureter not visualized. Cystoscopic examination failed to detect this abnormality. The left urinary tract is somewhat dilated as a result of a ureteral stone overlying the sacrum.

In passing, attention should be called to instances of failure of visualization or poor visualization in the presence of good renal function, as determined by indigo carmine excretion, these cases are difficult to explain.

In the various aspects pertaining to the question of renal function and roentgenologic visualization, it should be emphasized that this method is excretory in nature and that one should therefore constantly bear in mind the processes taking place in both the renal and extrarenal systems.

A familiarity with the indications and contraindications for excretion urography possessed by most medical men makes it unnecessary to deal with these aspects.

CONCLUSIONS

Excretion urography has been found useful in many of the cases in which retrograde pyelography was in general indicated and in which the latter, in the presence of mechanical difficulties or infections, could not be executed, and vice versa retrograde pyelography is considered essential in corroborating or supplementing when the results with excretion urography are equivocal.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. BRAASCH AND SWICK

DR. IRA R. SISK, Madison Wis. I agree with Dr. Braasch's general statement regarding the application of this method in general diagnosis. That its greatest field of usefulness is in the diagnosis of obstructive lesions and stones cannot be denied. As he said many cases of tuberculous and of polycystic kidney can be recognized by this method alone. It has been my observation

that the greatest source of error is from reading into the film more than can really be seen, also from attempting diagnosis from excretory urography alone when there is pus in the urine and inflammatory disease somewhere in the urinary tract for which cystoscopy should also be used. Another source of error is in the cases of hematuria when normal kidney pelvis and ureters are found but lesions exist elsewhere in the urinary tract. Dr Braasch did not mention this method of diagnosis in children. In the clinic with which I am connected we use intravenous urography in a larger percentage of children than of adults. It is quite reliable in the diagnosis of tumors of the kidney in children and in determining the presence of anomalies or other conditions that may impede the progress in the ordinary pyelitis of childhood. Dr Braasch did not have time to read one portion of his paper which dealt with genito-urinary surgery. In determining the results in conservative operations on the renal pelvis and following transplantation of the ureters to the sigmoid, it is invaluable. Also much valuable information may be obtained from the procedure when used before the second ureter is transplanted regarding the function and the drainage on the side on which the operation has already been performed. Dr Swick's contribution is valuable. The advantage of a substance which, after oral administration, will give the pictures he has demonstrated is too evident to need discussion. Although he states that it is successful in only about 50 per cent of cases, he will with further work, I am sure, be able to develop the substance to a point at which it will be as valuable as intravenous urography is today.

DR L. T. LEWALD, New York. Dr Braasch and Dr Swick have added a great deal to the subject of excretion urography, a method which has now passed the experimental stage and points the way to a brilliant future not only in urologic work but also in general medicine. The surface apparently has only been scratched in regard to the use by the internist of this method of estimating kidney function and diagnosis of renal disease. I have been somewhat disappointed by the apparent lack of interest on the part of the internist in the use of this method of diagnosis in connection with the diagnosis of nephritis. I trust that Dr Swick's latest efforts to render the method applicable to office practice by means of the oral administration of sodium iodohippurate will stimulate internists and

also be possible to study the size and function of the kidneys (arteriosclerotic kidney). I do not know of any series of cases studied from this standpoint but hope to be able to carry out such a series in the near future. Dr Swick's statement that sodium iodohippurate may be safely used in children would make it possible to carry out a series of observations in connection with my service as roentgenologist at Willard Parker Hospital in a series of postscarlatinal cases, in an effort to

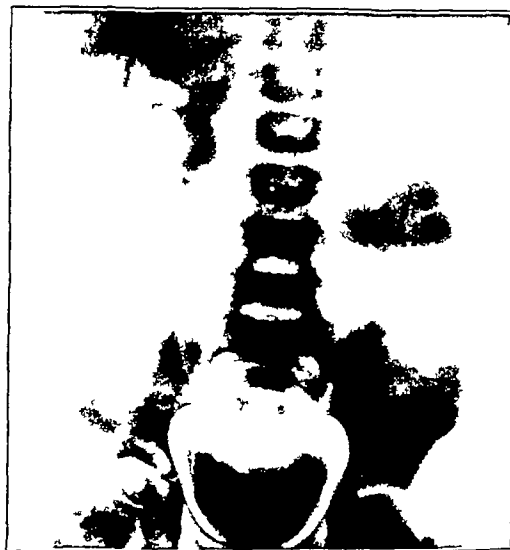


Fig 10—Later exposure of case shown in figure 9 showing the complete filling of the left infected hydronephrotic kidney. These two illustrations demonstrate the comparatively good visualization that may be encountered in some cases of hydronephrosis despite the mere presence of comparatively little intact renal tissue. Therefore in cases of hydronephrosis the presence of functioning renal tissue as evidenced by the radiologic changes is no quantitative criterion nor one for determining the type of therapeutic procedure.

determine the effect of the disease on the kidney. It would also appear possible to test out various diuretics taken in conjunction with excretion urography.

DR THOMAS D. MOORE, Memphis, Tenn. Dr Braasch mentioned the difficulty of interpreting urograms that lack definition. Three simple measures have been found worth while as a means of improving density and detail. 1. If the examination is to be made in the morning, a preliminary laxative is given the evening before. 2. A state of partial dehydration is induced by withholding fluids during the twelve hour period. 3. The use of localized compression immediately above the symphysis pubis by placing a small rubber ball beneath the compression binder has been found more effective than the large inflatable bag commonly used for the purpose. The small ball is removed during the actual exposure of the films, permitting the lower ureters to fill and eliminating the shadow of the ball.

DR W. F. BRAASCH, Rochester, Minn. To return to the subject of terminology, it should be stated that the term "excretion urography" cannot be used, since excretion is a noun. Therefore the term "excretory urography" will most accurately describe the procedure and will probably be permanent. The term intravenous urography probably will soon disappear entirely since the substance for oral administration which Dr Swick has recently discovered will doubtless supplant present methods of intravenous injection. Excretory cystography may be of value in calling attention to diverticula of the bladder or some other deformity in the vesical outline that might not be suggested by the clinical data at hand. It should be studied as a routine in every excretory urogram. If it is inadvisable to catheterize a patient, excretory urography may be used to demonstrate the presence of residual urine.

DR MOSES SWICK, New York. A case that demonstrated discrepancies between urographic observations and the real clinical condition recently came under my observation. The patient was a female in whom cystoscopy showed normal ureters. Catheters were passed up both sides and no obstruction

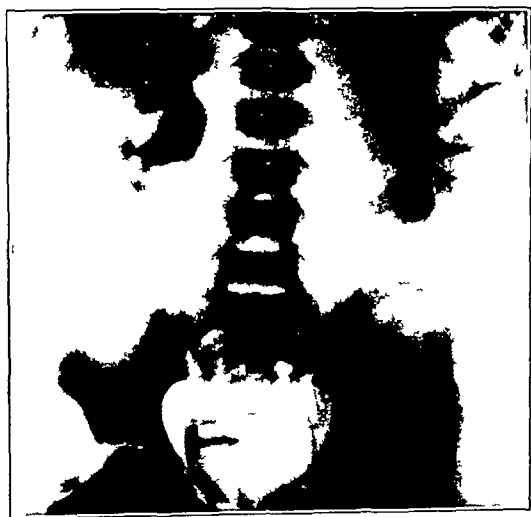


Fig 9—Intravenous urogram in a 6 year old child admitted for pyuria showing a dilated right urinary tract with angulation of the ureter. The left kidney shows filling of three dilated calices. Its ureter is not visualized. See figure 10.

roentgenologists to greater effort in this respect. From my former experience as a pathologist it would seem possible not only to differentiate certain anomalies of the kidney, such as absence of one kidney or the presence of a horseshoe kidney or a double ureter but also to determine the size of each kidney and differentiate such conditions as chronic interstitial nephritis (small granular kidney). In cardiovascular disease it should

was encountered. A pvelogram showed no cupping. Several days later, cystoscopy was performed again and a normal pvelogram was made, but this time it showed dilatation and clubbing of the calices on one side. A few days later cystoscopy was done and this time the pvelogram showed clubbing on both sides. Two years later the patient showed eveground changes and evidences of uremia. In other words, this patient had from the beginning a pvelonephritis, which was not recognizable by the investigations made and the disease went on to the stage of typical contracted kidney.

INTERPRETATION OF CHEST ROENTGENOGRAMS

KENNON DUNHAM, M.D.
CINCINNATI

For more than twenty years the laboratory with which I am associated (as many other laboratories) has studied necropsy material to determine the relation between x-ray densities and pathologic observations. It is my opinion that the relative degrees of scar tissue and pulmonary exudate can be determined from a study of x-ray films with sufficient accuracy to be of great practical value in the diagnosis, prognosis and treatment of pulmonary tuberculosis.

Pulmonary tuberculosis can be understood more easily if the various lesions are regarded as the products of inflammation and if it is remembered that tuberculous infection varies from marked chronicity to

The study of a case of pulmonary tuberculosis necessitates determining not only the extent and location of the lesions but also the relative amounts of scar tissue (repair, suggesting resistance) and of the pulmonary exudate (acute inflammation). Great consideration must be given, not only as to whether a cavity has formed, but also as to whether an abscess, which causes

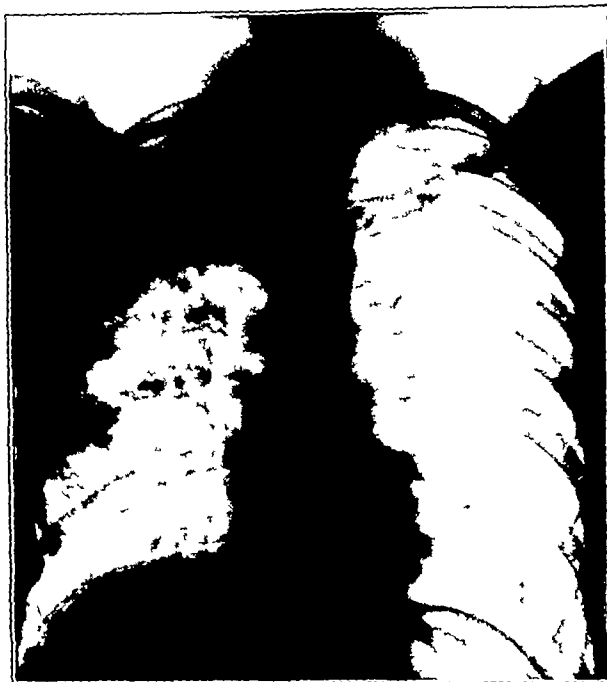


Fig 2—Exudative or pneumonic type tuberculosis due to pulmonary exudate in upper right lobe. Very virulent inflammation. Cavity breaking down. Lower lobe and part of upper lobe illustrates caseous bronchopneumonia due to aspiration. Bronchogenic spread.

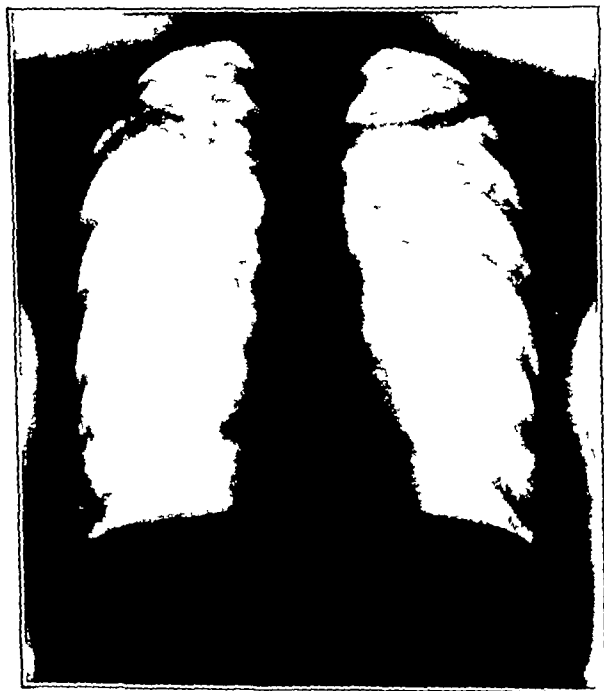


Fig 1—Fan (below clavicle) illustrating lobular pneumonia found in adult apical tubercle. Stereoscopically this is seen coming to the back and not to the anterior part of the chest.

severe activity. Thus the densities as shown on the x-ray film reveal lesions that vary from dense scar tissue (proliferative type) to extensive pulmonary exudate (exudative type).

From the Department of Tuberculosis, University of Cincinnati College of Medicine.
Read before the Section on Radiology at the Fifth Fourth Annual Session of the American Medical Association, Milwaukee, June 1-5, 1933.

a cavity, will probably develop. Inflammation with repair or degeneration, due to tuberculous infection, exists just as it does following other infections. Thus, pulmonary tuberculosis may manifest itself as lobar pneumonia, lobular pneumonia or bronchopneumonia. Such lesions occur in patients who have had sufficient previous tuberculous infection to produce a state of allergy in the individual. Miliary tuberculosis as described in textbooks, not the miliary tuberculosis of Laënnec, probably develops when allergy does not exist or when it is not sufficiently active to permit the tubercle bacillus to cause an inflammatory reaction and produce exudate. But this is another story.

Adult apical and subapical tuberculosis, also called nodose and fibroid tuberculosis, starts as a lobular pneumonia and, as Birch-Hirschfeld showed in 1898, most commonly develops in the posterior apical bronchus. This should not be described as below the clavicle because that indicates the anterior part of the chest. This type of lesion has been described as the fan, because it was first visualized as such on the x-ray plate. It is a localized area of pulmonary inflammation with pulmonary exudate, which may repair or break down (a lobular pneumonia). At a later date other similar lesions may develop and then there are two or more areas of lobular pneumonia in different inflammatory stages. These show different densities on the x-ray film. To differentiate these densities and to determine the extent and degree of repair or degeneration of the lesions necessitates excellent stereoscopic films.

Caseous bronchopneumonia usually follows when the lobular pneumonias break down and liberate nascent tubercle bacilli. This is often spoken of as the bronchogenic spread and is due to the aspiration of infectious dioplets into good lung tissue. It commonly follows a hemorrhage when the sputum is positive. This lesion is portrayed on the x-ray plate as fine, coarse, or flocculent mottling (indicating varying degrees of the vicious-

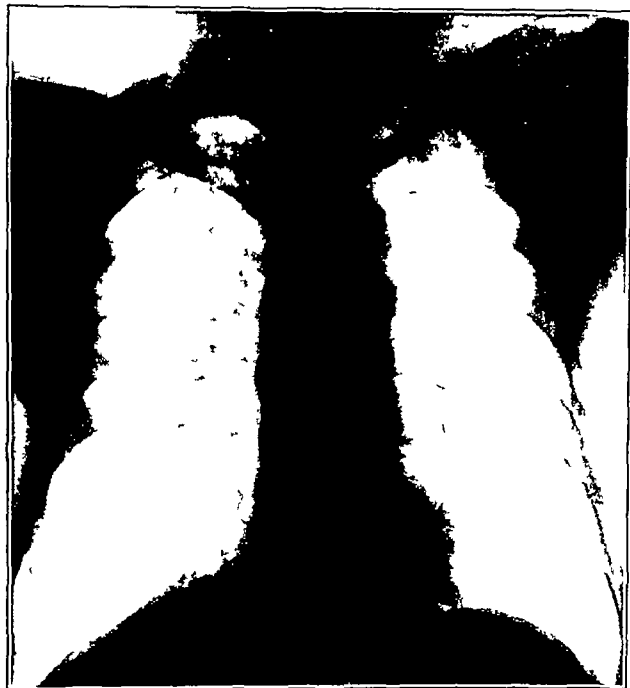


Fig 3—Fibroid tuberculosis—the proliferative type due to connective tissue in lobe illustrates great chronicity

ness of the infection) associated with extensive and usually old lesions in the upper lobes.

Tuberculous lobar pneumonia is not as prevalent as tuberculous lobular pneumonia but is a common lesion. It has been written of as basal tuberculosis and I have written of it as basal tuberculosis but have been sufficiently Irish to describe basal tuberculosis in an upper lobe. It is more common in Negroes and children than in white adults. It is a very vicious tuberculous inflammation and few survive it. It usually cavitates, and the lung should be collapsed as soon as the diagnosis is confirmed by the presence of positive sputum. The entire lobe is seldom involved at the start but it has a nasty way of spreading even before positive sputum is obtained. Frequently, exudate will absorb in one part of the lobe and a cavity form in another part of the same lobe.

Two types of x-ray densities in tuberculous pneumonia are to be noted. One patient will have the even density of a heavy pneumonia and another the mottling of bronchopneumonia. These cases showing the mottling of bronchopneumonia do not have the upper lobe lesion from which to aspirate infectious droplets. Positive sputum is found comparatively late in either tuberculous pneumonia or the basal type of tuberculosis simulating bronchopneumonia. The x-ray density is not characteristic as it is in the fan type. A diagnosis may be suspected but not made from the films alone. Malignancy as well as any pulmonary exudate may simulate the densities of tuberculous lobar pneumonia (basal tuberculosis).

The difference between lobular tuberculosis and tuberculous lobar pneumonia is probably due only to the severity of the infection. The virulence of the germ, the size and frequency of the dose and the resistance of the body each plays its unknown part.

Lobular tuberculosis, a localized inflammation, more frequently repairs and lays down scar tissue and is often spoken of as fibroid tuberculosis. Thus it is all important to distinguish between scar tissue and pulmonary exudate. If the exudate is spreading, one may expect that an abscess will develop and a cavity form. If the exudate is not spreading, one may expect that scar tissue is being laid down and that absorption is taking place. This is determined by a series of films taken over a few months and answers the question as to whether pneumothorax or other collapse therapy is indicated.

Pulmonary exudate, due to whatever cause, requires rest in bed until quiescent, and medical supervision much longer. To determine the degree of pulmonary exudate and fibrosis, the best x-ray plates are not good enough. Stereoscopic plates are a necessity. There has been much discussion as to which are the best exposures for x-ray chest films. I would answer that question by saying that the best exposure is that which will show best and most accurately the anatomy of the lung, without contrast mediums. The film that will show the trachea, the right and left bronchus, the pulmonary arteries and the trunks to the five lobes will do, and such an exposure will not destroy the picture of the



Fig 4—Tuberculous pneumonia in upper right lobe. Sputum is positive. This the author sometimes refers to as basal tuberculosis in an upper lobe. Such cases will break down very soon after this condition develops. Abscesses are forming and a cavity must follow.

fine exudate for which one is looking. It will prevent mistaking exudate for scar tissue (fibrosis).

When exudate is absorbing and scar tissue is developing, the patient is improving, and it is all important that the proper deduction be made. The care of the patient depends on it.

The only treatment of tuberculosis is to assist repair and prevent degeneration as far as is possible.

ABSTRACT OF DISCUSSION

DR HENRY K. PANCOAST, Philadelphia. Dr Dunham was I believe the first in this country to teach roentgenologists how to diagnose pulmonary tuberculosis correctly, and that was because he taught that it must be diagnosed on the basis of the actual pathologic process that is present. What he has shown is an interpretation of pathologic processes that are present. It is surprising in how many instances this teaching has not been realized and in how many instances those who are attempting to diagnose tuberculosis do not realize that there are definite criteria for correct interpretation: (1) a knowledge of the anatomy of the lung, (2) a knowledge of the appearance of the lung in the roentgenogram within normal limits, (3) a knowledge of the pathology of tuberculosis, (4) how that pathologic condition appears in the roentgenogram, and (5) the



Fig. 5.—Basal tuberculosis in a Negro with positive sputum. This is the bronchial pneumonic variety in contrast to the homogeneous density of the pneumonic type. Such a film might be produced by carcinoma. Tuberculosis should never be read from the film alone in such a case.

correct technic of the examination. Every one of those factors is absolutely essential to a correct diagnosis. One must show the shadows that are the most difficult to bring out: those of the exudate. One must have stereoscopic films at least to make the original diagnosis because the single film contains the shadows of all structures all the way through the chest cast in one flat plane. Those lesions or structures which are farthest away from the film will be almost invisible in some instances because they are spread out over such a wide film area. The stereoscope brings everything back to the place at which it belongs and shows which structure or which lesion casts the shadows. It is customary to regard lobular pneumonic areas in the apical portion of the upper lobe as tuberculous in origin in practically all instances. Such appearances are not all tuberculous, however, because other infections may produce the same appearances. They have the same appearance as that of tuberculous exudate but they disappear in a week or ten days. I never think of making a final diagnosis of pulmonary tuberculosis in many cases seen for the first time when such exudative shadows are found in the upper lobe but I insist that the patient be examined again in a period of possibly three weeks in order to make certain that the individual does not have some other infection. It is surprising how many times the shadows will disappear.

DR H. KENNON DUNHAM, Cincinnati. When these fans or lobes of pneumonia of different densities appear showing infection that have occurred at different times and in different ages

of repair or degeneration, one is quite safe in making a diagnosis of pulmonary tuberculosis. When a pneumonic-like area of one density appears, one cannot accurately deduce the etiologic factor. I have presented two illustrations of cases coming to autopsy to show the importance of not diagnosing tuberculous pneumonia from one density. By studying these chests over months, one can determine whether pulmonary exudate is extending and therefore that the patient is worse, or whether pulmonary exudate is arrested or is disappearing by absorption, and the patient is better. Putting it in another way, when the X-ray film does not show the pulmonary lesion advancing, the patient is improving, but in the pneumonic type there may be absorption of exudate in one part and a cavity developing in another part of the same lobe, also a lesion on one side may be getting much better and a new and nasty lesion developing on the opposite side. It is all important to study X-ray films to determine the relation between pulmonary exudate and scar tissue development and to realize the terror of these basal (pneumonic) types of tuberculosis, which seldom fully recover. In this way the roentgenologist can best help the clinician by determining the need of additional rest or collapse therapy.

LEUKEMIC RETICULO-ENDOTHELIOSIS
(MONOCYTIC LEUKEMIA)

WITH REPORT OF CASES

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LOS ANGELES

More or less generalized involvement of the reticulo-endothelial system is found in various pathologic conditions, which can be fairly well grouped under the following headings:

- 1 Storage histiocytomatosis—Gaucher's disease, Pick-Niemann disease, xanthomatosis and sometimes, diabetic lipemia
- 2 Granulomatosis—Hodgkin's disease
- 3 Hyperplasia—reticulo endotheliosis
 - (A) Leukemic reticulo endotheliosis (monocytic or histiocytic leukemia) with or without blastoma formation
 - (B) Aleukemic reticulo endotheliosis with or without blastoma formation—response to infection (?) or true systemic disease (?)
- 4 Tumors—reticulum cell lymphosarcoma

The conditions classified under 1, 2 and 4 are fairly well defined, but considerable discussion has arisen concerning reticulo-endotheliosis. The pathologic changes in the cases described are nearly uniformly constant and consist chiefly of a diffuse proliferation primarily of the reticulum cells and sometimes of the endothelial cells in the hematopoietic system, chiefly in the spleen and lymph nodes, and in most of the other viscera. Some investigators, notably Sternberg maintain that the condition is merely an atypical response to infection. Sternberg considers all acute leukemias in the same category. However, most writers consider the cases with an increased number of cells of the monocytic series associated with diffuse growth of the reticulo-endothelial cells in the tissues as cases of monocytic leukemia comparable in all respects to the more usual myeloid and lymphatic leukemias. Reschad and

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Schilling-Torgau¹ reported the first case of this type in 1913, and Rosenthal² the first in America in 1921. Dameshek,³ in his comprehensive review of the subject in 1930, listed eighteen proved cases, and Clough⁴ in 1932, gave a complete summary of twenty-three cases, including one of his own. Gittins and Hawksley,⁵ Farrar and Cameron,⁶ Rinchart,⁷ Rucks and Cunningham,⁸ Cooke,⁹ Gardner,¹⁰ Sydenstricker and Plumizy¹¹ and Bohne and Huismans¹² each reported one case, and Osgood and Lyght¹³ two cases, checked hematologically and by postmortem histologic studies by Bunting, making a total of thirty-three cases in all. Autopsies were made in twenty-one cases of this group.

Clinically, most of the cases described have run a clinical course similar to other acute leukemias, lasting from two weeks to a few months. Infection of the mouth or throat and spontaneous purpura are the rule, especially late in the disease. Rapidly progressive anemia and moderate fever are practically constant features. Palpable swelling of the spleen, liver and lymph nodes is more often present than not. Examination of the blood as a rule shows a marked or moderate decrease in red cells and hemoglobin, the white cell counts averaging from about 15,000 to 50,000, however, two cases have shown more than 400,000 cells (Swirschewskaja¹⁴ and Lawrence and his associates¹⁵). The monocyte cells usually form from about 50 to 75 per cent of the total count, sometimes more. The type cell described by all the authors is seldom a mature monocyte, but usually its immediate precursors, including the most immature cell, or histiocyte (Dameshek³). These cells are larger than any normal blood cells and in moist preparations show marked motility, and in supravital preparations, active ingestion of dye. In preparations stained according to the Wright and Giemsa methods pseudopodia or scalloping of the edges testifies to the motility of the cells. The cytoplasm closely resembles that of a mature monocyte, being blue-gray and of ground-glass appearance, with typical fine monocyte granules which are first seen about the nucleus in the youngest cells. The nucleus is large, oval, indented, bean-shaped or even almost lobed. The chromatin is arranged in a very fine spongelike meshwork which becomes more coarse and skelelike in more mature cells. Phagocytes containing red cells and cellular fragments have been reported by a few authors, especially Clough⁴. Nearly all authors report that the

immature cells are oxidase-negative, although Farley¹⁶ and Lawrence and his co-workers¹⁵ found the cells to be positive.

Post mortem, necrotizing lesions in the mouth or the throat are usually found, and constantly the lymph nodes, spleen and liver are enlarged. Usually the bone marrow is hyperplastic. Evidences of hemorrhages in the skin and serous surfaces are nearly always found. The kidneys are swollen, owing to the growth of reticuloendothelial cells and degenerative tubular changes. Rarely, organizing fibrinous exudate is seen on the pericardium (Gardner¹⁰ and Lawrence and his associates¹⁵), or even on the pleura (Gardner¹⁰).

Histologically, the architecture of the lymph nodes and spleen is obliterated by a marked proliferation of reticular cells, periportal growth is seen in the liver, and proliferation of reticular cells is found in the kidneys, the serosal surfaces, and the perivascular stroma of nearly all the organs, especially the suprarenal glands, thymus, pancreas and gastro-intestinal tract. The bone marrow usually shows a diffuse or patchy involvement. Thorough study of the reticulum in between the newly formed cells has not been made in any of the recent leukemic cases in the literature, although in an aleukemic case, Tschistowitsch and Bykova¹⁷ showed clearly a marked proliferation of a fine meshwork of reticulum to which the cells were intimately connected. In most cases there was little evidence of proliferation of the endothelium. However, Bock and Wiede¹⁸ described proliferation of the endothelium of the lymph nodes, the splenic sinuses and the Kupffer cells, with transitions from swollen cells to completely loosened leukemic cells. Swirschewskaja¹⁴ found the same changes in the splenic sinuses.

Myeloid hyperplasia of slight degree, in the spleen especially, has been found in a few cases, including those of Schilling,¹ Vyshegorodtzeff¹⁹ Ugrumow,²⁰ Fleischmann²¹ and Bingel.²²

Of particular interest is a case reported by Gittins and Hawksley.⁵ A child, aged 1 year, showed a typical blood picture and had diffuse reticulosis and bilateral large tumors in the ovaries, each of which weighed 210 Gm., and were composed of cells identical with those in the other tissues. Such a case speaks against the inflammatory infectious origin of monocyte leukemia but simulates more nearly cases of myelogenous leukemia with secondary blastomatous growths, as classically seen in chloroma.

Cases of leukemia showing immature granulocytes and monocyte or monocyte-like cells in the blood stream have always led to confusion in classification and to arguments as to the origin of the monocytes. Anagnostou²³ considered the cells in dispute in his case to be monocytoïd promyelocytes (oxidase-negative). Hittmair²⁴ described a case showing myeloid leukemia on postmortem histologic examination in which 42.8 per

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Study of the cells with Wright, Giemsa and peroxidase stains showed no noteworthy changes in the cells other than those tabulated as monocytes (fig 1). These cells were all about from one and one half to two times the diameter of neutrophils and only rarely could cells with mature nuclei be found. In the remaining cells the nuclei were obviously immature and showed nuclear patterns varying from a fine spongelike network to the coarser lacing seen in mature monocytes of which very few were seen. The nuclei were oval indented or sometimes bean shaped. The cytoplasm was dull pale blue and of ground glass appearance and the majority of the cells contained a fine,

typical, lilac, monocytic granulation much finer than leukoblastic or neutrophilic granules. In some of the youngest cells these granules were arranged chiefly about the nuclei, the granules filling the cytoplasm. Only rarely could very young ovoid cells with no granulation be found. In these cells nucleoli were sometimes found. Many of the cells showed marked pseudopod formation or fluting of the edge of the cytoplasm. A few cells showed mitosis. Rare cells indistinguishable from myeloblasts and leukoblasts were found, but it was impossible to trace gradations from these cells to the

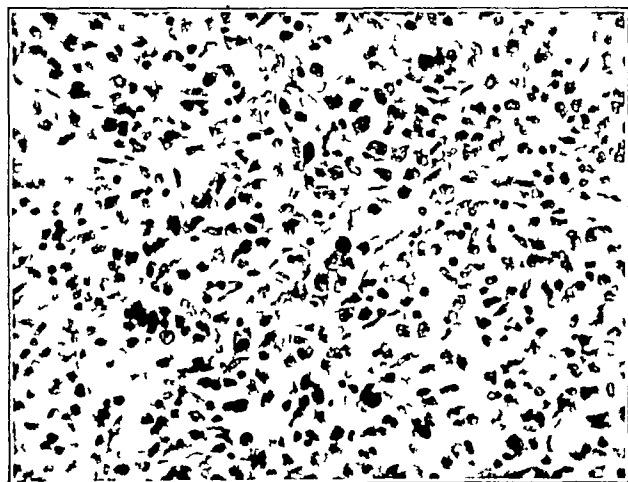


Fig. 2 (case 1).—Spleen showing obliteration of architecture by reticular cell overgrowth. High power view.

type cell previously described. In the rare leukoblast the granules were much larger and darker than the granules of the young monocytes. The type cell was peroxidase-negative when stained according to the Goodpasture, Sato and Washburn methods. There was no noteworthy change from day to day in the immaturity of the cells in the various counts tabulated. In fresh moist preparations the cells were actively motile, and in Janus green preparations the dye was found in many small dots throughout the cytoplasm. The red cells showed a slight variation in size and shape and on the average were slightly smaller than normal. A few cells showed polychromatophilia, and an occasional normoblast was found.

On the day after admission, a soft, fleshy node 4 by 4 by 2 cm was removed from the left groin. Sections showed nearly complete obliteration of the normal architecture by a profound overgrowth of reticular cells similar to those in the nodes removed at autopsy, to be described.

Autopsy was done four hours after death.

The anatomic diagnosis was acute leukemic reticulo-endotheliosis with marked enlargement of the spleen and liver, hyperplasia of the bone marrow and diffuse enlargement of the lymph nodes throughout the body, ulcerogangrenous inflammation of the base of the tongue and the throat and gums, reticular cell proliferation in the kidneys, pancreas, serous surfaces, stomach, intestines, liver and all the organs sectioned, hypostatic hyperemia and bronchopneumonia of the lungs, fibrinous pleuritis and peritonitis, moderate icterus, moderate anemia, petechial hemorrhages of the skin and of the pelvis of the kidneys, cloudy swelling of the myocardium with dilatation of the heart.

The necrotic lesion in the base of the tongue extended into both peritonsillar areas and the base of the epiglottis. Marked swelling of the aperture to the larynx and of the false cords, pharynx and palate was also present. The lymph nodes in all groups of the body varied from 1 to 3 cm across and were soft, fleshy and opaque gray-pink on the surfaces made by section. Of particular interest was an organizing fibrinous exudate about the capsule of the spleen, between the liver and diaphragm and on the pleural surfaces. The omentum mesentery and gastrocolic ligament were stiffened by a diffuse soft apparent fibrosis, and the serosa of the posterior abdominal wall was moderately thickened. The liver weighed 2400 Gm

and was light tan-yellow, the markings were just visible. The kidneys were enormous and weighed, together 550 Gm. They were soft and bulged markedly under the capsule when cut, and the surfaces were opaque and gray-yellow. The heart showed nothing abnormal besides dilatation of its chambers. The thymus measured 8 by 5 by 2 cm and resembled the lymph nodes on section. The bone marrow of the femur, ribs, vertebrae and sternum was devoid of fat, gray-pink and fairly firm in consistency and could be removed in a solid chunk from the shaft of the femur.

Histologic sections showed the architecture of the spleen (fig. 2) and the lymph nodes (fig. 2) to be obliterated by a profound growth of reticular cells with oval, indented or bean-shaped vesicular nuclei and a moderate amount of cytoplasm in intimate connection with a fine meshwork of abundant reticulum demonstrated by Foot's silver stain. Mitoses were common. This proliferation distorted the splenic sinuses and the lymph sinuses in the nodes. No evidence of proliferation of endothelium was found. Occasionally a small nest of myeloid cells, apparently myeloblasts, and rarely a clump of nucleated red cells and a rare megakaryocyte were seen in the spleen and the lymph nodes, but these bore no such relation to the reticulum as did the reticular cells. The liver (fig. 4) showed marked proliferation of reticular cells in a large amount of reticulum in the periportal channels. There was no undue proliferation of Kupffer cells. The bone marrow was entirely devoid of fat and the majority of the cells present were similar to those in the spleen, lymph nodes and elsewhere. A moderate number of foci of myelogenous cells and erythropoietic centers and a few megakaryocytes were present. A large amount of fine reticulum was present in between the reticular cells. In all the organs, leukemic cells were found in large numbers in the blood vessels, they were similar to the cells in the reticulum. Sections of the kidney showed marked reticular cell proliferation throughout the organ and profound degenerative changes in the tubules. The thymus (fig. 5) was almost entirely composed of reticular growth. In the intestine the serosa of the entire wall was involved. The pancreas, peribronchial tissues and pleura were likewise the seat of reticular cell and fibrillar overgrowth. In sections of the necrotic area in the throat stained by Warthin's method for spirochetes,



Fig. 3 (case 1).—Lymph node showing overgrowth of reticular cells and marked atrophy of germinal center. Low power view.

complete gangrene of the superficial portions was seen, in which there were many Vincent's spirochetes and myriads of other bacteria. Below this was a marked growth of reticular cells in the soft tissues and penetration of spirochetes alone deep into the non-necrotic base of the ulcer.

Smears of the spleen and lymph nodes showed the predominating cells to resemble those in blood smears and only the few granulocytes present were peroxidase positive. A few more granulocytes, chiefly myeloblasts, were found in smears of the bone marrow. No bacteria were demonstrated in smears or sections of any of the organs.

CASE 2—Mrs M R, a white woman, aged 22, entered the Los Angeles County General Hospital on Jan 18, 1932, complaining of pain in the throat and a swelling in the left tonsillar area of one week's duration, which had ruptured and discharged pus two days before admission, general malaise and loss of appetite. Examination showed a draining peritonsillar abscess, and the rest of the examination was essentially negative, except that the patient appeared pale and sicker than she should from the local lesion in her throat. A blood count revealed anemia and leukopenia which could not be explained

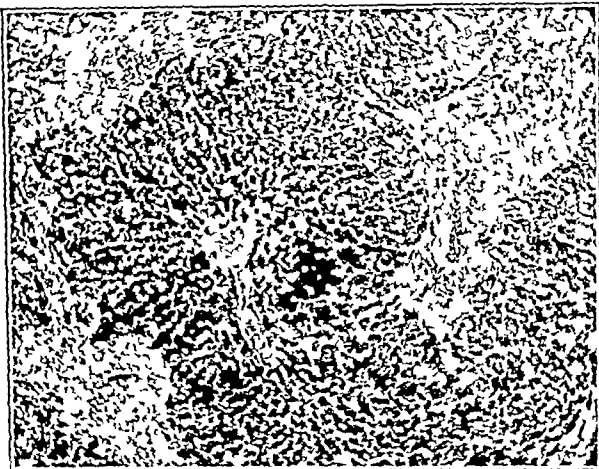


Fig 4 (case 1)—Liver showing periportal reticular hyperplasia. Low power view

After transfusion on January 31, she felt considerably better, but her temperature did not return to normal for three weeks from its average of 101 F in the first week. She left the hospital against advice on February 18 and was not heard of again until March 30, when she returned to the hospital still complaining of pain in the left tonsillar area, fever, generalized aching malaise and swelling of the nodes in the neck which had started to develop shortly after she left the hospital. On examination, she appeared acutely ill and pale with a temperature of 101.6 F. There were swelling and redness of the mucosa of the throat, pharynx and palate and a gray membrane was present over the previously incised region in the left tonsil. Moderate enlargement of the cervical and submaxillary nodes but not of the nodes of the groins and axillae was present. The spleen and liver were not felt. The heart and lungs were normal. No petechiae were found in the skin.

Laboratory examinations revealed negative Wassermann and Kahn tests, several negative blood cultures and negative urinalysis except for a trace of albumin. A Widal test was positive at a dilution of 1:80 but the patient had had typhoid in late childhood. The blood counts are given in table 2.

TABLE 2—Blood Findings in Case 2

Date	Hemo- globin (Sahli)	Red Cells Millions	Leuko- cytes	Neutro- phils	Lym- pho- cytes	Mono- cytes	Pol- yphils	Baso- phils
1/20/32		2.6	1,000	0	71	1	0	0
1/21/32		2.7	1,200	0	70	1	0	0
2/1/32		2.6	2,000	15	50	1	0	0
2/6/32	64	2.0	2,000	70	0	0	0	0
2/11/32	62	2.4	4,000	40	0	0	0	0
2/16/32	60	2.5	14,000		0	0	1	1
4/1/32		2.4	4,000	1	0	0	0	0

The monocytes in smears up to and including those made on February 11 were mature monocytes but in the last two smears made on March 31 and April 5 they were practically like those in case 1.

The cells described as monocytes were similar to those in case 1. They were almost entirely immature cells with a fine chromatin pattern in their nuclei and occasionally one or more small nucleoli. The cytoplasm was a typical dull blue with

very fine, dustlike, lilac granules throughout the entire cytoplasm in most cells, and about the nucleus in the youngest cells. A few cells had no granules. Pseudopod formation and scalloping of the edges of the cells were prominent. The peroxidase stain failed to show granules in the monocytes.

The patient went steadily downhill, the ulceration and swelling in her throat increased and her temperature remained around 102 or 103 F, she died on April 6. The clinical diagnosis was acute monocytic leukemia. Autopsy was conducted two hours after death by Dr Butt. The summary is as follows:

The anatomic diagnosis was acute leukemic reticulo-endotheliosis with moderate generalized involvement of the lymph nodes, moderate enlargement of the spleen and liver and moderate reticular hyperplasia of the bone marrow, reticular cell proliferation in the pancreas, ovaries, kidneys, lungs, suprarenal glands, uterus, heart, pleura, pericardium and thymus, acute hemorrhagic bronchopneumonia, ulcerogangrenous inflammation of the left tonsillar region, acute fibrinous pleurisy, anemia, petechial hemorrhages in the skin of the shoulders, arms and thighs and the pleurae.

The lymph nodes were moderately enlarged, the largest, in the mesenteric group, being 1.5 cm long. The nodes were discrete, soft and gray-white on section. The spleen weighed 550 Gm; the pulp was rather firm, red and homogeneous. The liver weighed 2,100 Gm; the sectioned surface was pale, and the peripheries of the lobules were visible as small gray points. The bone marrow of the femur was composed of fat, enclosing small gray areas, and that of the sternum was nearly fat-free and gray-red. Both lungs were covered on their dependent surfaces with a thin layer of fibrin. A few petechial spots were also found. The dependent portions were boggy and edematous and showed a few small consolidated areas with much hemorrhage. The heart was moderately dilated. The epicardium showed a few petechiae. The ovaries were moderately swollen and on section appeared soft and gray-red.

Histologic study revealed findings practically similar to those in case 1. Proliferation of similar reticular cells without endothelial hyperplasia was seen in all the organs, including the uterus and ovaries, most marked in the spleen and lymph nodes where the normal architecture was obliterated by a profound growth of these cells. The growth in the liver was

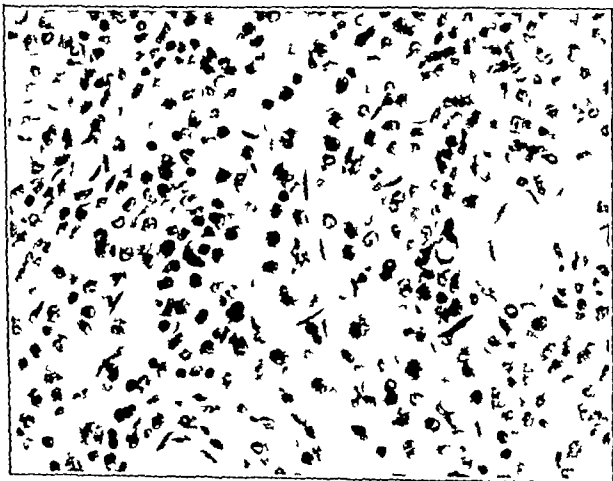


Fig 5 (case 1)—Thymus showing marked growth of reticular cells similar to leukemic cells in blood capillaries. High power view.

periportal. Some toxic were found in the myocardium in and about which necrosis of the muscle fibers was present.

CASE 3—Mrs L B, a housewife aged 58 entered the Los Angeles County General Hospital on Jan 18, 1933 complaining of weakness, loss of appetite and burning on urination of about six weeks duration previous to which she had been well and active. At the onset of her illness she had several teeth removed and two days later she had fever and general malaise which she called the flu. However she had no cough or respiratory symptoms. Soon thereafter burning

and frequency of urination developed which continued until admission. She constantly felt so tired and weak that she could not do her housework. Her appetite had been so poor that she had lost a moderate amount of weight. Some stuffiness of the nose and soreness of the throat had developed in the last few weeks. Her past history and family history were irrelevant, except that she had never had urinary burning or frequency until the present illness. She had no history of cough or shortness of breath until the last few weeks when these symptoms developed to a moderate degree.

On examination she appeared to be poorly nourished, anemic and considerably older than her given age. The positive findings of interest were pallor of the skin and mucosae and absence of all teeth, the sites of the recent extractions were not entirely healed. The tongue was coated, the pharynx clear and the tonsils large, smooth and reddened. There were a few small pea-sized movable lymph nodes in the groins but none in the other palpable groups. The heart was rapid but otherwise showed nothing of interest. The lungs were resonant throughout, the breath sounds were normal. The spleen was not palpable, but the liver extended one fingerbreadth below the margin of the ribs. Pelvic examination gave negative results. The temperature was 99° F, the pulse rate 100, the respiratory rate 22 and the blood pressure, 130 systolic and 70 diastolic.

On admission, urinalysis showed a cloudy acid urine the specific gravity was 1.028, there was 2+ albumin, the urine was negative for sugar and in the sediment there were numerous leukocytes but no casts. The Wassermann and Kahn tests were negative.

A blood count taken on Jan 22, 1933, showed hemoglobin 44 per cent (Sahli), red cells 2,330,000, white cells 35,400 and platelets 207,000. There was no excess bleeding from the puncture wound. Study of the smear showed myeloblasts 12 per cent, neutrophils 45 per cent, lymphocytes 7 per cent, monocytes, 72 per cent and promyelocytes 45 per cent. The monocytes or type cells were large cells from 20 to 40 microns in diameter with abundant pale blue cytoplasm containing fine purple granules much finer than those in leukoblasts situated chiefly about the nucleus or throughout the entire cytoplasm. The nuclei were of various degrees of immaturity, most of them showing a very fine arrangement of chromatin. Most of the nuclei were ovoid, indented kidney shaped or even partially or completely lobed. Many of the cells showed pseudopodia and nearly all showed scalloped or fluted borders. Transitions from these cells to myelocytes could not be demonstrated. On January 26, the white count was 42,000 and on February 2, 76,000. Smears showed practically the same differential count as previously. On February 10, the white cell count was 60,000 and the differential count was as follows: myeloblasts 9 per cent, leukoblasts, 13 per cent, promyelocytes, 25 per cent, metamyelocytes, 1 per cent, neutrophils, stab forms 1 per cent and segmented forms 35 per cent, lymphocytes, 6 per cent and monocytes, 64 per cent. The cell picture was the same as that just described.

The patient went progressively downhill, running a fever of from 99 to 100° F during the entire stay in the hospital. Her spleen was never palpable, but moderate generalized lymphadenopathy developed, the largest nodes about 2 cm long, being felt in the groin. A blood transfusion of 500 cc was given on February 10 but within a few days the patient appeared as pale as before. During the last two weeks more marked redness and swelling of the tonsils and peritonsillar regions, palate and laryngeal aperture developed, with marked embarrassment to respiration and swallowing. No ulceration, however, was noted. There was no abnormal bleeding during the illness. Death occurred on February 23, or about eleven weeks from the onset of the disease. Permission for autopsy was refused but a small, soft, gray pea-sized node was removed from the groin three weeks before death. On section it showed obliteration of the normal architecture by a marked proliferation of the reticular cells of the same type as in cases 1 and 2. Rarely an eosinophilic myelocyte was also seen. Smears made from the node showed a predominance of large mononuclear cells similar to those in the blood.

CASE 4—Mrs L. A., aged 52 was admitted to St Francis Hospital San Francisco, on March 10, 1933 with the history

of having had a tooth extracted from the left side of her upper jaw on February 10. The socket apparently healed well, but one week later she had swelling of the lymph nodes about the angle of the left side of the jaw. Considerable pain and swelling developed in the whole left side of the upper jaw about the same time, and she was compelled to spend most of her time in bed. Moderate fever was present at this time. The inflammation failed to respond to cold compresses and gargles; the pain became more severe the gums became swollen and tender and bled easily but not spontaneously and the patient was sent to the hospital. She became progressively worse and had a fever of from 101.6 to 104.6° F. The pulse rate varied from 90 to 140 and the respiratory rate, from 28 to 44. She died on March 14. Her spleen, liver and axillary and inguinal lymph nodes were not palpable. Dr A. M. Moody, pathologist, who allowed me to study the smears and report the case, first made the diagnosis of monocytic leukemia on the clinical history and the blood findings, which were as follows: On March 10, the hemoglobin was 5.5 Gm., the red cells numbered 2,470,000 and the white cells 105,000. The differential count showed myeloblasts 1 per cent, leukoblasts 1 per cent, metamyelocytes 0.5 per cent, neutrophils stab forms, 1 per cent and segmented forms 25 per cent, lymphocytes 6 per cent and monocytes 88 per cent. The next day there were 92,700 white cells with 85 per cent monocytes. On March 12, the hemoglobin was 5.2 Gm., the red cells numbered 2,070,000 and the white cells 102,000 of which 87 per cent were monocytes. On March 13, the blood count showed 116,800 white cells with 86 per cent monocytes.

The cells classed as monocytes were with rare exceptions immature monocytes with nuclear shape and characters similar to those in cases 1 and 2. Pseudopod formation was often seen and fine granulation of the cytoplasm was found in nearly all of the cells. The cells were peroxidase negative.

A blood culture was negative. The reaction to the Wassermann test was 4+ that to the Kahn test, 2+. Autopsy was not allowed.

COMMENT

The first two cases were typical examples of acute reticulo-endotheliosis. The first was leukemic from the start, and the second was aleukemic until the patient's second admission to the hospital when the white cell count was found to be high. The fourth case showed a typical blood picture and it is regretted that an autopsy was not allowed in order to determine the changes in the tissues. Case 3 is open to some question since not sufficient counts were made and autopsy was not granted. The presence of a moderate percentage of immature myelogenous cells (17 per cent) is suggestive of a myeloblastic origin of the monocytes, but the biopsied node showed predominantly reticular cell proliferation, and the monocytic granules in the blood smear were peroxidase-negative, two points which lead us to believe that this case also should be grouped with the others as acute leukemic reticulo-endotheliosis or monocytic leukemia.

SUMMARY

Leukemic reticulo-endotheliosis (monocytic leukemia) is a distinct condition characterized by the presence of a clinical picture similar to that in other acute leukemic states and the presence of an extraordinary number of monocytes in the blood usually immature forms. Pathologically, a diffuse enlargement of the lymph nodes, spleen and liver is found, and in the microscopic examination of the tissues, widespread proliferation of reticulo-endothelial cells is found to a degree as great as or greater than is usually found in the so called infiltrates of other leukemias.

A report of four cases conforming to the foregoing feature with autopsies in two and biopsy in one is given.

ABSTRACT OF DISCUSSION

DR ROY R KRACKE, Emory University, Ga During the past year the Hematological Registry of the American Society of Clinical Pathologists has centered its activities chiefly on the study of monocytic leukemia. In the Scientific Exhibit there are twenty-six blood films and autopsy preparations from cases that have been reported in this country and from all of the cases that have been reported from Great Britain. There is justification for establishing this disease as a clinical entity only if the view is accepted that the monocytes have a separate origin from other leukocytes. Of the twenty-six cases, one third were reported as monocytic leukemia, in spite of the fact that the leukocyte count seldom if ever went above the normal figure, the diagnosis being established chiefly on the immaturity of the cell type that was found in predominating numbers. This so-called aleukemic state is seen in monocytic as well as in other leukemias. I have been impressed by the close relationship that seems to exist between the aleukemic states of monocytic and other leukemias with agranulocytosis. For example there is one case reported in the literature in which at one time the white cell count was 600, with complete disappearance of cells except lymphocytes. Therefore the diagnosis of agranulocytosis was made. Yet in this patient only a few weeks later the white cell count was over 100,000. Four of the cases seem to be of undoubted myeloid origin presumably originating in the marrow. There is one case reported by Lawrence three years ago a typical case of monocytic leukemia in which the diagnosis was made on clinical observations, fixed films and supravital studies, which later eventuated into a definite case of myeloid leukemia. This is in accordance with the views of many hematologists especially the Europeans and notably the school headed by Naegeli, who believe that monocytic leukemia should not be construed as a clinical entity in which the cell type is the monocyte or monoblast, but that these are temporary variants of myelogenous leukemia. As Naegeli states, they will finally pass into myeloid leukemia if the patient lives long enough. I am inclined to believe that there are two types of monocytic leukemia, one in which there is a true reticulo endotheliosis as exemplified by the four cases that have been presented by Dr Foord and another which apparently has its origin in the bone marrow and which should more properly be called an acute or atypical myeloblastic leukemia. It may be possible that in these blood dyscrasias, on the one hand, an excessive stimulation of the bone marrow occurs, whereas on the other hand the depression of the same functions results in agranulocytosis. There are many factors in common between the two diseases. Apparently both are of recent origin being reported only within the past fifteen years and occurring only in white persons. I agree with Dr Foord in his interpretation of his cases in that they seem to be cases of true reticulo endotheliosis and probably not variants of myeloid leukemia.

DR C H BUNTING, Madison, Wis. I have seen four cases that might come under this classification. I have however, objected to the name monocytic leukemia on theoretical grounds. If as appears probable the normally circulating monocyte is of bone marrow origin and among its other characteristics gives the oxidase reaction the majority of these reported cases could not be considered to be typically monoblastic leukemias. Two of the cases I have seen were shown pathologically to be primarily of lymph node origin. They showed in addition to very pathologic large cells somewhat resembling monocytes a fairly high percentage of much larger cells with large oval nuclei and prominent nucleoli typical morphologically of endothelial cells. The third case clinically of lymph gland origin presented no endothelial cells but a preponderance of atypical monocytoïd cells the size of large lymphocytes and also atypical small lymphocytes. The fourth case seen in the last two weeks and without completed pathologic examination might be called monocytic leukemia as the preponderant atypical cells gave a sharp peroxidase reaction. It must be granted however that in any type of leukemia one cannot disregard any part of the hematopoietic system, bone marrow, lymphoid tissue and spleen are all involved in any reaction within the system.

DR R S POTT, Philadelphia. I want to mention a case of Dr Crocker and I observed in the Philadelphia General

Hospital, of aleukemic monocytic leukemia diagnosed during the life of the patient which I believe is unique in the report of these cases. The diagnosis was based on a biopsy of the sternal marrow and a biopsy of the lymph glands and was confirmed by autopsy. It is interesting in our case that there was present a very marked reticulo-endothelial hyperplasia. The case was similar to those reported by Dr Kracke in that infection, i. e., otitis media preceded the onset of the illness, which was in an Italian girl, aged 14 years. Several times during the course of her illness the peripheral blood study showed a complete absence of the granulocytic series of cells, and a diagnosis of agranulocytosis therefore was considered. The biopsy and autopsy indicate that it is unsafe to base a diagnosis on the study of the peripheral blood alone, in these cases. The question of Vincent's infection came up in this case. While the girl had an acute otitis media no Vincent's organisms could be found except toward the end of her illness when they were found in the vagina. At necropsy no lesion in the vagina could be noted. The question of Vincent's infection as an etiologic factor in these conditions is always interesting. Dr Crocker, hematologist at the Philadelphia Hospital, believes that Vincent's organisms are an etiologic factor, in spite of certain studies showing a lack of pathogenicity. Whether the Vincent organisms can be subdivided into various strains and certain strains be etiologic in nature is worth considering. Crocker has found that those occurring in ordinary trench mouth gingivitis are of a coarse, heavy structure, whereas those associated with agranulocytosis are of a much finer, threadlike structure.

DR FREDERIC E SONDERMAN, New York. Clinically it might be well to emphasize the significance of the red cell picture in cases of monocytic leukemia. In my experience with quite a number of them the immediate prognosis is better based on the type of anemia and the rapidity with which it increases than on the number and types of leukocytes as long as these establish the diagnosis. In other words, a picture typical of pernicious anemia with only moderate leukocytosis and moderate characteristic change in the differential count offers a poorer immediate prognosis than a picture typical of secondary anemia with a more marked leukocytosis and more pronounced characteristic change in the differential count. Occasionally there is a recovery from this disease, while such a course may represent an error in diagnosis, this seems difficult to believe on account of the typical blood picture. I recall three such supposed recoveries. In one the acute febrile stage with increasing anemia lasted some ten weeks, but it was five years before the leukocytes and the relative increase in monocytes returned to normal figures. In the two others the acute stage was not as severe and typical blood pictures were months in returning to normal. It is an interesting fact that the organisms of Vincent's angina were found in the throat of every patient I have seen with but one exception. Years ago I had the impression of a probable relationship between these organisms and acute leukemia but since then I have also repeatedly found them in cases of infectious mononucleosis.

DR VICTOR LEVINE, Chicago. There have recently been three cases of leukemia at the Cook County Hospital two of which were true monocytic leukemias and one a case we could not diagnose until postmortem but it proved to be a monocytic phase of a myelogenous leukemia. In all three cases a postmortem examination was performed and the final basis for our diagnosis was the histologic examination of the bone marrow. In the case with the uncertain diagnosis before death the blood contained monoblasts and myeloblasts the monoblasts being in marked predominance. Yet at postmortem the bone marrow was essentially that of a myelogenous leukemia with a preponderance of myeloblasts and myelocytes. On the other hand the two cases of true monocytic leukemia showed at postmortem a marked predominance of monoblasts and monocytes. Thus in cases of monocytic leukemia the bone marrow may be involved to an extent similar to that found in any other type of leukemia. In making a diagnosis of monocytic leukemia the essential blood finding is the presence not only of large numbers of monocytes but also of numerous examples of the immature precursors of the monocytes which we call monoblasts. Case reported without the presence of these immature

forms are not true monocytic leukemias. Cases of this type, especially those in children, often following throat infections, should be classed as acute infectious mononucleosis. Unfortunately the literature is full of conflicting terms. The term "reticulo-endotheliosis" does not seem good, because it more properly belongs to cases of infectious origin with marked proliferation of reticulum and histiocytic cells in various organs. Such cases are not true leukemias. They do not have the typical blood and anatomic pictures and should be sharply separated from monocytic leukemia.

DR. A. G. FOORD, Pasadena, Calif., In answer to Dr. Levine, I do not care to enter into a discussion of terminology but have merely followed the terms used by others in the literature and have included both the terms of leukemic reticulo-endotheliosis and monocytic leukemia in the title and have stressed the former name because the discussion was primarily from the pathologic standpoint. Since there is still a dispute as to the origin of the monocytes, I purposely refrain from entering into this phase of the subject. However, from present knowledge it appears that Dr. Kracke is right as to the origin of these cells from the reticulum cells in some cases and from the myeloblasts in others. In answer to Dr. Sondern, I can say that there are no cases reported in the literature in which the patients have recovered. In some cases of acute mononucleosis the cells in the blood are very hard to differentiate from the cells in the cases reported but all cases with cells as those described end fatally. The immaturity of the nuclei is a very important feature in making the diagnosis.

RELAPSED OR RESISTANT CLUBFOOT OF EARLY CHILDHOOD

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There are three distinct types of deformity to which the title of congenital talipes equinovarus can be given: 1. The common variety, which, except in rare instances, occurs in otherwise normal infants. 2. A rare type associated with, and part of, a failure of development of the extremity as a whole, either of the lower limbs alone or of the upper limbs as well, also arthrogryposis. 3. A rare type associated with the absence of the tibia and some of the toes.

If a real criterion is set for cured clubfoot, every clinic will have a certain number of disappointing results after all types of closed procedures have been exhausted. This is true even when treatment has been instituted early and efficiently carried out.

Pathologic specimens of clubfoot in infancy are rare. Most of the descriptions in the literature on this subject and specimens in museums are of the adult foot. Recognition of the size and location of the bones is difficult because the amount of subcutaneous fat present in the foot of the infant and small child hides the bony prominences, and the direction of the tendons is obscured and not easily located or traced to their insertion. Roentgenograms are an aid in older children but less helpful in early childhood before the bones are well developed, as there is no roentgenologic visibility.

At present, the widely accepted cause in common clubfoot is a failure of development to the normal state of all the structures of the foot, independent of any extrinsic influences, which results in a congenital subluxation of the astragalocalcaneoscaphoid joint and a shortening of the muscles and ligaments that control the socket for the head of the astragalus. The bones of the forefoot are relatively underdeveloped, and

movements of the foot are restricted by the muscle shortening.

The bones of the foot, except in rare instances, though underdeveloped, are otherwise normal and are held fixed in the equinovarus position by the shortened ligaments, which have failed to develop, and by the underdevelopment of the muscles of the leg and foot, which is also a part of the primary failure of development of the entire limb.

When the normal foot is placed in equinovarus, the chief movement takes place in the astragalocalcaneoscaphoid joint, the other joints of the foot add little to the ability to assume this position. On comparing the normal foot held in equinovarus with clubfoot, it is found that the latter shows an exaggeration of this position. The astragalus is subluxated and separated from the scaphoid, which is internal and below the head of the astragalus, the os calcis is more inverted, and the muscles and ligaments are shortened, thus fixing the foot in equinovarus.

A survey of the last eighty cases of clubfoot in my clinic showed that a large number, approximately 45



Fig. 1.—Taken from a specimen of congenital clubfoot in the Museum of the Royal College of Surgeons, London. This specimen illustrates very clearly the position which the astragalus occupies within the tibiotalar mortise. It also shows the difficulty that must exist in some deformities of altering the position of the scaphoid.

per cent, were rather easily corrected by repeated manipulations and plaster fixation during the early months of infancy but that more than half of the cases had relapsed requiring further treatment. Twenty-five per cent of these had been again manipulated with tenotomy of the achilles, plantar structures, and deltoid ligament and had been improved. Others, in spite of repeated manipulation and tenotomy of all resisting structures, reached the age of 3 or 4 years with a noticeable deformity, an awkward gait and an inability to run.

Nineteen per cent required open operation on the ligaments on the internal border of the foot, freeing the tarsal bones and 10 per cent required subsequent manipulation, tenotomy and fixation after open operation.

The early manipulation with some form of fixation is the generally accepted treatment for clubfoot in infants and should begin at the age of 1 or 2 weeks and be rapidly carried to complete correction.

Whether the fixation is by adhesive plaster splints or plaster casts is not as important as that all the manipulations be done by the same person, who has a very definite idea of the component parts of the deformity and the amount of force necessary to correct the deformity.

This procedure must be supplemented by lengthening of the plantar structures and tenotomy of the achilles tendon in many cases to complete the correction.

From recent experiences I am convinced that no manipulation is able to replace the scaphoid in some of the cases, and blind cutting can only by sheer luck regularly reach the ligaments, owing to the altered shape and position of the joints. Another observation is that a relapsed clubfoot is in reality a partial correction of the original deformity, which is hidden by a new position.

After repeated manipulations, the scaphoid at operation was found still in close contact with the sustentaculum. The head of the astragalus was still prominent on the dorsum of the foot and the os calcis was inverted. This must account for many failures to correct the deformity. In other words, relapsed cases are those in which the relations of the astragalus, scaphoid and os calcis, in spite of manipulation and tenotomies, remain the same as they were originally or only slightly altered.

A cured clubfoot should have a normal appearance and present a hollow on the dorsum of the foot in the position formerly occupied by the head of the astragalus, and the patient should be able voluntarily to evert and dorsiflex the foot well beyond the right angle.

It is not my purpose in this paper to attempt a discussion of the treatment of all types of clubfoot or to dwell on the various methods in use for all ages from infancy to adolescence and adults, but to limit the discussion to the relapsed foot of early childhood, shortly after the walking age in an otherwise normal child.

My attention was called to the following operation, originated by Mr E P Brockman¹ in London and, while it is too early to report the final result in many of my cases, I feel that it has made a decided improvement in the results decreased the number of severe manipulations, shortened the long periods of plaster fixation, and prevented a number of unnecessary tenotomies. A marked increase in the ability of the patient to evert and dorsiflex the foot voluntarily was also noted. Brockman bases his operation on his theory that the usual clubfoot is due to a congenital subluxation of the astragalo-scaphoid joint and also that relapse is due to failure to reduce this dislocation (fig 1). My observations coincide with the views of Brockman.

OPERATION

Under an Esmarch bandage a short incision is made over the outer side of the os calcis and all the plantar muscles and fascia are freed from the plantar surface of the os calcis.

Another incision is then made through the skin and fascia along the inner border of the foot. The tibialis posticus tendon and the vessels will be recognized and found in a more forward position, passing straight down instead of in the usual curved position entering the sole of the foot at a right angle. On the posterior side of the tendon and vessels the incision is carried to the os calcis and the remaining plantar structures on the inner side with the origin of the abductor hallucis are freed with a small chisel. It is well to carry this stripping out on the surface of the os calcis to the calcaneocuboid articulation and up to the subastragalar joint.

Vessels and tendons are retracted and the incision is carried to the scaphoid and internal cuneiform bones. The sheath of the tibialis posticus can be opened and the tendon divided if necessary. The insertion of the tibial tendon is free from the scaphoid and reflected with all the structures from the internal inferior surface of the tarsals, exposing the scaphoid and sustentaculum.

By moving the forefoot, one can identify the proximity of the scaphoid and the internal malleolus. All the ligaments on the internal and inferior surface are divided and, if the scaphoid and the internal malleolus are not widely separated, the ligaments on the superior surface of the scapho-astragalar joint must also be divided.

The foot is then manipulated and the forefoot everted. If it is not loosely held in a fully corrected position, the dissection is carried forward on the plantar surface, the attachment of the tibialis posticus being freed from the other tarsal bones, and all resisting ligaments on the superior internal surface of the scaphocuneiform joint, which resist, are also freed. In one case it was necessary to sever the ligaments between the internal cuneiform and the first metatarsal.

For this operation to be successful the dissection must continue until the scaphoid is fully replaced in front of the astragalus and the anterior part of the os calcis moves outward from beneath the astragalus and a space exists between the sustentaculum and the scaphoid and the heel is really everted.

The wounds are closed and a plaster cast extending over the flexed knee is applied with the foot in the best position the circulation will allow but not overcorrected.

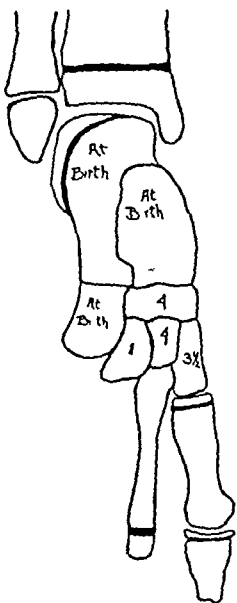


Fig 2—Age of x-ray visibility from Camp and Cilley of the Mayo Clinic. The astragalus, os calcis and cuboid are visible roentgenographically at birth. The external cuneiform is visible at 1 year, the internal cuneiform is visible at from 3 to 3½ years and the scaphoid and middle cuneiform are visible at 4 years.



Fig 3—Tracing from roentgenogram of M S aged 2 years with relapsed club foot before operation. The scaphoid is not visible.

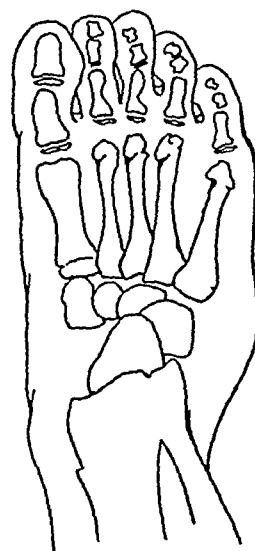


Fig 4—M S aged 6 years four years after operation. There is a corrected position and development of the tarsal line but the scaphoid is still not visible.

¹ Brockman, E. P. Congenital Club Foot. (Tables Equinovarus) New York: Wm. Wood & Co. 1909.

In ten days or two weeks the cast is removed and the foot further corrected, if desired. A tenotomy of the achilles is performed now, if necessary, and a new cast applied, allowing the stitches to remain for another two weeks. At the end of the second month the cast is removed, and walking is allowed. Ordinary shoes are worn, physical therapy and instruction in walking are given, and a night splint is applied when necessary.

By gentle dissection the amount of fibrous tissue formed is less than one would suppose from the rather large area exposed. By carrying the incision to the bone and reflecting all the soft tissue *en masse*, one preserves all the main vessels, nerves, tendons and tendon sheaths on both the dorsum and plantar surfaces and free access is had, which allows division of all resisting ligaments.

Unless some extraordinary malformation presents itself, roentgenograms of clubfoot are taken very rarely. Since performing the operation described, I have not been able to get roentgenograms made of all these feet before and after surgery, but I have been fortunate enough to get a series of plates at different ages.

Besides the deformity presented, an interesting and peculiar finding has been noted. Admitting that the bones in a clubfoot are usually less developed than those of a normal foot of the same age, I have observed that the scaphoid is far behind all the other bones.

According to Camp and Cilley,² the os calcis, astragalus and cuboid are normally visible in roentgenograms

at birth (fig 2). The external cuneiform presents itself at 1 year of age, the internal at 3½ years and the middle cuneiform and scaphoid at 4 years of age. In some of these patients with clubfoot who were operated on, the scaphoid was not visible at 6 years of age, although the other bones were roentgenologically visible.

Especially was this impressive when a unilateral case showed a well formed scaphoid in the normal foot and no sign of one in the roentgenogram of the operated foot. Surgery in this case was done at 2 years of age and the roentgenograms were taken at 6 years.

Fig 5—M. B. aged 9 years with relapsed clubfoot before operation

The thought comes to mind whether the delayed ossification is caused by manipulation and operative procedures or whether sometimes in clubfoot the delayed ossification and relatively soft structure is a cause of or agent in relapse when closed methods were thought to be efficient. From the few cases of which

I have roentgenograms it is not possible to draw any definite conclusions. This delayed ossification, however, may account for the relatively shorter internal border in clubfoot and may also fail to give enough wedging action to hold the forefoot outwardly rotated at the midtarsal joint.

As yet it has not been possible to follow these cases long enough to watch the development of the ossification with a series of roentgenograms, but it will be an interesting complementary observation. However, it is

known that the case is not a congenital absence of the scaphoid because the cartilaginous body of this bone has been observed in each case at operation.

CONTRAINDICATIONS

The small size of the region to be explored and the large amount of fat in the sole of the foot of infants are definite contraindications against open operations before 3 years of age. These difficulties are absent in older children.

Open approach is very difficult and often impossible in the very rigid foot, such as seen in arthrogryposis with extreme shortening of all the soft parts on the inner border of the foot, as the internal cuneiform and first metatarsal may entirely hide the scaphoid and the small size of these structures prevents the replacement of the head of the astragalus.

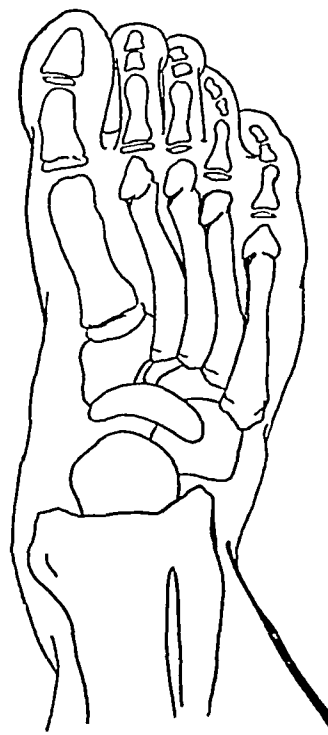


Fig 6—M. B. aged 11 years two years after operation. There is a reduction of the scaphoid on the astragalus and development of the tarsals.

CONCLUSIONS

Early manipulations cure about half of the cases of clubfoot in infancy.

Repeated manipulation and tenotomy of the achilles and other tendons and plantar structures will correct many more cases.

There remains 19 per cent of the cases which are rigid and, after repeated manipulations, show some improvement in appearance, but the head of the astragalus is still palpable in dorsiflexion and the heel held in some varus. This is the type of foot which is not fully corrected and readily relapses. The subluxation of the astragaloscaphoid joint has not been reduced.

The open operation is much to be preferred to repeated severe manipulations with repeated tenotomies or osteotomy in these relapsed cases, as one can by this method very definitely loosen the tarsal bones and place the forefoot on the head of the astragalus and at the same time replace the os calcis and evert the heel.

Osteotomy of the tibia with rotation of the distal fragment in relapsed cases produces one deformity to cover another and, while improving the appearance some, adds little to the function of the foot.

As bone operations rarely give a really satisfactory result and should seldom be done before puberty, this

² Camp J. D. and Cilley E. I. Diagrammatic Chart Showing Time of Appearance of the Various Centers of Ossification and Period of Union. *Am. J. Roentgenol.* 26: 905 (Dec.) 1931.

ligament operation finds its greatest field of usefulness in the relapsed rigid clubfoot of early childhood

I feel that open operation, except in the very young and very rigid feet, has been of great assistance in correcting the relapsed clubfoot of early childhood

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ABSTRACT OF DISCUSSION

DR HAROLD A. SOTFIELD, Chicago I have been using an incision rather similar to Dr Chollet's since 1930 and to the present have used it in forty-seven cases. The incision is made on the inside of the foot rather than the lateral side and extends from the medial malleolus down over the internal cuneiform bone. Often a second incision is made along the plantar surface to free the plantar fascia. After the plantar structures are loosened the internal cuneiform is separated from the scaphoid, and the scaphoid from the astragalus. Then the scaphoid is rotated laterally around the head of the astragalus. This rotation seems to have a great deal to do with the correction. In the forty-seven cases I have had four relapses so far. There is a supplementary treatment which I often employ after the operation. This consists of a plaster cast applied in two sections, extending from above the bent knee to the toes. The parts are separated just below the ankle joint and felt is placed along the edges. Incorporated in the cast are two small strips of aluminum, one extending across the metatarsal region, the other

in seeing the results that he obtained. These results were well demonstrated at a meeting in Toledo two years ago. These feet can be well corrected but the condition will recur unless proper after-treatment is maintained. I found that in these cases the after-treatment has to be maintained for quite a long time by the use of plaster-of-paris walking apparatus or corrective shoes. The correction in which function is good and in which the form seems all right I think should be checked up by roentgenograms following the correction at intervals of six months, nine months or a year or two years later, to make sure that the deformity does not recur.

LOCAL DIATHERMY IN PERIPHERAL CIRCULATORY DISTURBANCES

SAMUEL PERLOW, MD

WITH THE TECHNICAL ASSISTANCE OF KATHRYN BLAKELY
CHICAGO

Heat is a time honored measure in the treatment of peripheral circulatory disturbances of the extremities. It is one of the best known means of relieving pain and limiting the spread of gangrene and ulceration. Diathermy, as it is now known, was recommended in the treatment of articular and circulatory disturbances by Nagelschmidt in 1897, after he demonstrated that high frequency currents produced heat when passed through the tissues.¹ It has been shown that it is possible to produce deeper heat with this agent than by any other means.² Heat applied externally cannot penetrate deeply because of the skin resistance and because the circulating blood removes it rapidly. The heat of diathermy is produced within the tissues faster than the heat regulating mechanism can dissipate it. The immediate effect produced is a transitory stimulation of the nervi nervorum followed by a quickened arterial and capillary circulation, and by a vasodilatation of the blood and lymph spaces. This is followed by an increased vascularity between the poles.¹ Kovacs³ lists the clinical actions of diathermy as (1) active arterial hyperemia and hyperlymphemia, (2) local relief of pain by the heat acting on all the nerve endings, (3) antispasmodic action, and (4) bactericidal action.

In the peripheral circulatory clinic of Michael Reese Hospital all patients with arterial disturbances of the lower extremities are placed on a routine management for a three to four weeks period of observation. The regimen consists of rest, contrast baths and Buerger's exercises. Tobacco smoking is stopped, and local diathermy treatments of one hour each are given twice a week to each extremity. If the patient begins to improve, we continue this treatment. If there is no improvement, we resort to the more radical forms of therapy, as typhoid vaccine or hypertonic salt solution intravenously, nerve blocks and the like. We have found that almost all cases of arteriosclerotic ischemia without gangrene, and a few of the mild cases of thrombo-angitis obliterans, are improved by this management both subjectively and objectively.

PROBLEM AND METHOD

This investigation was undertaken to determine the value of diathermy and the part it plays in the improvement. A series of various types of cases was tested.

From the Peripheral Circulatory Clinic and the Department of Physiotherapy of the Michael Reese Hospital.
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2. Coulter, J. S. Medical Diathermy. J. A. M. A. 98: 193-1991 (June 5) 1932. Christie, R. A. and Dinger, C. A. L. Experimental Study of Diathermy: Evidence of Penetration of High Frequency Current Through Living Tissue. J. Exper. Med. 46: 715-734 (Nov.) 1927.
3. Kovacs, Richard. Diathermy—Its Physics and Clinical Indications. M. J. A. Re. 124: 631-634 (Nov. 17) 1926.

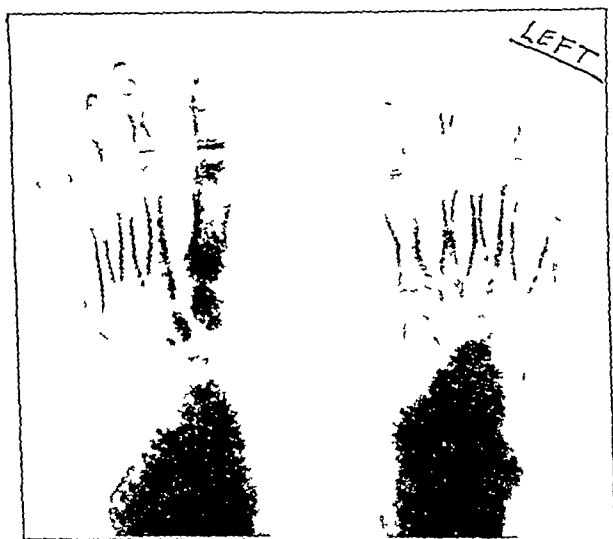


Fig. 2.—S. M. aged 6 years with unilateral left clubfoot, operation age 2 years. The scaphoid is not visible in the left foot four years after operation; it is normally developed in the right foot.

on the back of the calf about 2 inches below the knee. Only about 1 inch of each end of the strips extends outside the plaster and they are bent hook shaped. To these hooks elastic bands are attached and by varying the position of the bands almost any direction of pull can be applied. The cast and bands are put on immediately after operation and the foot is suspended from a metal cradle in the bed. The patient, of course, must remain recumbent or in a half sitting position. The elastic traction exerts a constant easy pull and gradually stretches the tight structures, bringing the foot into an overcorrected position. When the desired position is obtained a solid cast is applied. By exerting the pressure gradually and steadily there is a minimum amount of trauma to the foot and it is not necessary to subject the patient to radical wrenching and twisting at the time of operation. With the elastic traction the desired position of overcorrection can be obtained in from two to ten days. Previous to employing this method it often took it six to ten weeks to get a satisfactory position. Naturally it cuts the time of hospitalization to about one fourth the usual time and the treatment is essentially a hospital procedure.

DR FRANK G. MURPHY, Chicago When I heard about Dr Chollet's treatment of this type of clubfoot I was interested

Pulsations of the larger arteries were graded, the skin temperatures were taken and histamine skin tests were made to determine local circulatory efficiency before and one-half hour after diathermy was given. The

TABLE 1—Protocol of Case 17 Arteriosclerotic Ischemia of Lower Extremities*

		Before Diathermy 3/26/32	After Diathermy 3/26/32	6/2/32
Pulses				
Right	Femoral	++	++	++
	Popliteal	+	+	+
	Dorsalis pedis	+0	+	+
	Posterior tibial	+0	+	+
Left	Femoral	++	++	++
	Popliteal	+	++	++
	Dorsalis pedis	+	+	+
	Posterior tibial	+	+	+
Skin Temperature				
Right	Above knee	32.6 C	34.2 C	31.8 C
	Below knee	32.4	34.0	31.6
	Above ankle	32.2	37.2	31.4
	Dorsum of foot	32.4	36.0	30.6
	Ball of foot	30.8	34.4	29.4
	End of big toe	30.0	33.4	28.4
Left	Above knee	32.4	34.0	32.0
	Below knee	31.8	34.2	31.8
	Above ankle	31.4	37.0	31.6
	Dorsum of foot	31.2	36.0	30.8
	Ball of foot	30.2	33.8	30.0
	End of big toe	28.4	33.0	28.6
Histamine Test				
Right	Above knee	++	++	+++
	Below knee	+	+	++
	Above ankle	+	++	++
	Dorsum of foot	+	++	+++
Left	Above knee	+	++	+++
	Below knee	+	+	+
	Above ankle	+	++	+
	Dorsum of foot	0	++	+++
Mouth temperature		37.0	37.2	37.1
Room temperature		22.0	22.0	21.6

* Treatment consisted of diathermy by means of double cuff and plate with a current of 1,000 milliamperes. Before treatment was started the patient had pains in the calves of the legs and in the ankles after walking one or two city blocks. After two months of diathermy he was able to walk six blocks before the pains started.

Cuff and plate electrodes were used, the cuff was placed around the thigh just above the knee and the plate under the anterior half of the foot and the toes. The two extremities were treated at the same time by using double electrodes. A current of from 750 to 1,000 milliamperes was employed in most cases. In a few debilitated individuals, 600 milliamperes was all that could be given without discomfort.

The controls for this investigation were the previous histories of the patients tested. In each case there was a history of long standing disability in spite of various types of treatment. The results are summarized in tables 2 and 3.

In order to determine whether the rise in the skin temperature and the improvement in the skin reaction to histamine were due to the direct action of the diathermy in heating the tissues or whether they were due partly to relief of the vasospasm which accompanies all types of arterial disease, a few individuals with normal circulation were tested. The results are shown in tables 2 and 3.

COMMENT

The immediate results of the diathermy are as follows. In cases of arterial disturbance, 59 per cent of the nonpulsating vessels were made to pulsate, and the pulsations of 45 per cent of all open vessels were improved as compared with improvement in only 20 per cent of the vessels in normal subjects. The average maximum rise in the skin temperature in cases of circulatory disturbance was 53 degrees C, as compared with 37 degrees C in the normal subjects, and the average rise in the skin temperature of the big toe was 36 degrees C, as compared with 22 degrees C in normal persons. The peripheral circulation as determined by the skin reaction to histamine was improved

TABLE 2—Summary of Results After Half an Hour of Diathermy*

Case	Name	Diagnosis	Diathermy Milli amperes	Arteries				Skin Temperatures			Histamine Test Improved on Foot	Rise in Vouth Temper- ature C
				Closed Vessels		Open Vessels		Min imum Rise C	Maxi mum Rise C	Average Rise Big Toe C		
				Num ber	No Opened	Num ber	No Im- proved					
1	H N	Thrombo angitis obliterans	300	3	3	3	2	0.2	7.0	6.5	++	0.0
2	L F	Thrombo angitis obliterans	900	0	0	0	2	0.4	6.2	4.7	0	0.4
3	A S	Thrombo angitis obliterans	1 000	6	0	0	0	0.0	1.8	1.6	0	0.4
4	M G	Thrombo angitis obliterans	750	0	0	0	3	0.0	3.9	3.3	+	0.4
5	A K	Thrombo angitis obliterans	1 000	0	0	0	0	1.0	2.2	2.0	0	0.4
6	O G	Thrombo angitis obliterans	1 000	1	1	0	3	0.4	6.2	6.2	+	0.6
7	M L	Thrombo angitis obliterans	800	0	0	6	0	0.0	7.2	6.1	+	0.0
8	M O	Thrombo angitis obliterans	750	2	2	4	2	0.2	4.4	1.5	+	0.2
9	A M	Thrombo angitis obliterans	750	0	0	6	3	0.0	4.4	2.6	+	0.4
10	J G	Thrombo angitis obliterans	750	1	1	2	1	1.0	7.0	1.0	+	0.0
11	L O	Arteriosclerosis	600	1	1	2	2	1.0	4.6	4.0	++	0.0
12	H S	Arteriosclerosis	800	0	0	0	3	0.0	6.5	1.8	+	0.0
13	M B	Arteriosclerosis	800	2	1	4	1	1.0	3.4	1.3	++	0.4
14	A S	Arteriosclerosis	800	0	0	0	1	0.0	4.6	3.2	0	0.2
15	A K	Arteriosclerosis	1 000	0	0	0	0	1.0	6.9	3.0	0	0.0
16	D B	Arteriosclerosis	1 000	2	2	4	1	0.2	3.2	1.7	0	0.4
17	L S	Arteriosclerosis	1 000	2	2	4	1	1.4	5.6	4.2	++	0.0
18	V C	Arteriosclerosis	750	4	4	2	1	1.4	6.0	5.6	++	0.0
19	I R	Raynaud's disease	900	2	2	4	3	0.8	8.6	8.2	+++	0.0
20	S V	Raynaud's disease	1 000	0	0	6	4	0.9	4.4	3.3	0	0.0
21	S D	Normal	750	0	0	6	5	0.4	3.0	0.5	+	0.0
22	J C	Normal	750	0	0	6	4	0.0	7.4	1.4	0	0.4
23	M B	Normal	1 000	0	0	6	0	0.0	2.8	0.8	0	0.5
24	L M	Normal	900	0	0	6	0	0.2	3.0	1.5	0	0.0
25	O C	Normal	750	0	0	6	0	1.2	7.4	6.8	0	0.2
26	J H	Normal	900	0	0	6	1	0.0	3.0	0.7	0	0.4
27	B R	Normal	750	0	0	6	0	0.0	2.0	1.5	+	0.0
28	S G	Normal	750	0	0	6	0	0.0	1.4	0.5	0	0.0

* Only the popliteal, dorsalis pedis and posterior tibial arteries were considered here because they were in the area given diathermy. Two subjects (10 and 11) had one extremity only.

patients were given diathermy treatments twice each week for a period of two months and were then tested again (table 1). No other form of therapy was given during this time. In all cases the extremities were exposed to the room temperature for twenty minutes before the initial readings were made. The diathermy was administered with the patient in a sitting position.

in 65 per cent of the cases of arterial disease and in only 25 per cent of the normal cases.

The rise in the skin temperature was most marked about the foot and ankle. There was no noticeable injury to the atrophic skin by the rise in the skin temperature. With all these changes locally the general effect was negligible as was shown by the slight rise

in the mouth temperature or no change at all in some of the cases. This is of considerable importance in view of the fact that many of these cases are debilitated and show some myocardial degeneration.

The opening of 58 per cent of the closed vessels in the cases of arteriosclerosis is definite evidence that there is a high degree of vasospasm in those cases to an extent not previously known. This fact and the greater rise in temperature in the cases of circulatory disturbances in the normal subjects indicate that relief of vasospasm is one of the means by which diathermy improves the circulation and heats the tissues.

TABLE 3—Summary of Results from Table 2

Diagnosis	Closed Vessels Opened per Cent	Open Vessels Improved per Cent	Average Temperature Rise		Histamine Test Improved on Dorsum of Foot per Cent
			Maximum C	Big Toe C	
Thrombo-angitis obliterans	53	36	5.2	3.6	70
Arteriosclerosis	58	50	5.1	3.1	62
Raynaud's disease	100	70	6.5	5.7	50
Average in arterial cases	59	45	5.3	3.6	60
Normal subjects		20	3.7	2.2	20

Most of the subjective effect of the diathermy was temporary and lasted from twenty-four to forty-eight hours, but after two months of treatment there was permanent improvement both subjectively and objectively in six of the eight cases of arteriosclerotic ischemia and in one of the ten cases of thrombo-angitis obliterans. Other investigators have had similarly good results with diathermy in cases of arteriosclerosis.

The reasons for the permanent improvement in the arteriosclerotic cases and the excellent immediate but poor permanent results in the cases of thrombo-angitis obliterans may lie in the pathogenesis of the two conditions. Arteriosclerosis is a chronic degenerative condition and the narrowing of the vessels takes place over a period of years. The tissues may have become accustomed to the slow diminution of the blood supply, and slight improvement in the collateral circulation may be sufficient to restore the normal functions. Thrombo-angitis obliterans is a more acute inflammatory disease. New vessels or parts of vessels are continually being thrombosed, resulting in a relatively sudden removal of the blood supply from the tissues. Diathermy produces excellent immediate results in this condition, probably by relieving the vasospasm, but in most cases the disease involves the primary vessels faster than the development of the collateral circulation by diathermy.

The two cases of Raynaud's disease tested showed definite immediate relief of vasospasm, but there was no permanent improvement in the condition.

CONCLUSIONS

There are not enough cases in our series to warrant a comparison between diathermy and other types of treatment in peripheral circulatory disturbances. Our results show that:

1. Diathermy locally is of definite value in the treatment of peripheral circulatory disorders especially in arteriosclerotic ischemia without gangrene.
2. Diathermy improves the circulation largely by relieving vasospasm.

185 North Wabash Avenue

4. Hagadone, A. E. Diathermy in Vascular Circulatory Disturbances and Arteritis. *Minor A. Med. Sci.* 8: 91 (May) 1915. Barlach, Samuel. Successful Treatment of Gangrene with Special Reference to Diathermy. *Type Medical Diathermy*. T. M. Soc. New York 27-933 (Dec.) 1915.

POSTVACCINAL ENCEPHALITIS

PROF. DR. E. GORTER
LEIDEN, THE NETHERLANDS

A study of the different diseases encountered in succeeding centuries is of the utmost importance. It has to overcome tremendous difficulties, which are mostly to be attributed to differences in methods of observation and study. But in part the difficulty lies in the more objective character of the symptoms in certain diseases, and I believe that to this group belongs postvaccinal encephalitis.

Most of the symptoms and the development of this complication of vaccination are so striking that it is extremely improbable that the predecessors of modern clinicians who were much better observers than the latter, overlooked its existence.

I can illustrate this by citing from an old booklet on vaccination, written by a doctor named Ranque and edited in Paris in 1801, what was said concerning the cerebral complications of variolation. This furnishes direct proof that symptoms such as those now observed after vaccination, which occurred after the use of another mode of protection against smallpox, did not escape the attention of medical men.

Ranque spoke of comatose conditions that are often encountered during the period of the fever. On page 33, in describing the technic of incisions, he mentioned the occurrence of terrific convulsions. On page 44 he indicated a method of treatment for cerebral complications, which are often dangerous, this consisted in taking the patients out of bed and placing them in the fresh air.

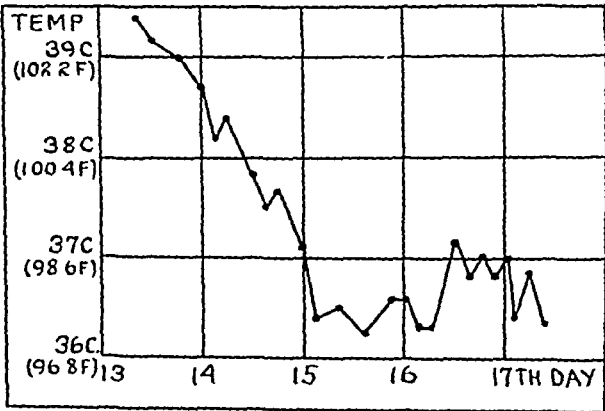


Chart 1—Temperature curve in case of postvaccinal encephalitis

In typical cases of postvaccinal encephalitis the symptoms are striking. I cite the following observation as an example:

REPORT OF A CASE

On the eleventh day after vaccination on the arm a boy, 3 years of age presented a rise in temperature to 104 F. He vomited once and was not drowsy or sleepy. The onset was quite sudden although several days before he had been somewhat drooping and low spirited.

On his admission to the hospital three typical crusts were found on the vaccinal lesions on the arm with a group of enlarged lymph nodes in the corresponding axilla. The general impression was not unfavorable. The child was not drowsy. Slight twitches in the right arm were observed, and also a

Read before the Section on Pediatrics at the Eighty-fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1931.

certain degree of strabismus, which was apparently not due to muscular paralysis. Other signs of a cerebral lesion were not distinct, but became so on the second day of his stay in the hospital, the twelfth day after vaccination. Drowsiness developed, with grinding of the teeth and sweating. The Kernig and Brudzinski signs were positive. There was distinct rigidity of the neck. The legs were somewhat hypertonic and the Babinski reflex was present. The eye-grounds showed no abnormalities.

On lumbar puncture the fluid was under normal pressure (20 cm. of water), there was no globulin but the number of

TABLE 1—Monthly Distribution of Cases of Postvaccinal Encephalitis

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total No. Cases
1923						1							1
1924				1			1		1		1		4
1925	2	3	17	3		1		1	1				29
1926		3	5	1	1	4	1	2	5	1			20
1927		3	10	4	4	4	4		3	3	2		43
1928	1		1	2	12	1	1		1	12			31
Total	3	8	35	11	5	11	7	3	12	8	3		103
No. of vaccinated children	5	9	24	13	9	8	7	5	9	9	5		103

cells was increased to 180 per cubic millimeter; these were mostly lymphocytes. The sugar content was 0.067 per cent. The blood count was only slightly different from normal: leukocytes, 9,800; lymphocytes, 35 per cent; monocytes, 5 per cent; red nucleated neutrophils, 10 per cent; segmented nucleated neutrophils, 49 per cent; and eosinophils, 1 per cent.

The temperature was high on the first day, but was normal afterward (chart 1).

The course of the disease was favorable. Improvement began on the third day after admission; all symptoms gradually disappeared. Drowsiness was last noted at the beginning of the second week, and on his departure from the hospital the patient behaved normally, showing no sign of a cerebral lesion.

TABLE 2—Distribution of Cases from 1924 to 1927 According to District

	Number of Vaccinations	Number of Cases	Cases per 10,000 Vaccinations
Zenland	19,623	9	4.5
Groningen	34,194	14	4.1
Friesland	33,967	10	2.9
North Holland	108,910	22	2.0
Guelders	69,970	12	1.8
South Holland	137,166	18	1.1
Overijssel	41,757	2	0.5
Utrecht	32,170	3	0.9
North Brabant	88,584	5	0.6
Drenthe	23,707	0	
Limburg	63,933	1	0.2
Total	657,161	96	1.5

COMMENT

This case represents a typical form of the disease, although cure was more rapid than usual. In not less than one third of all typical cases of the disease a fatal issue is observed. Symptoms of drowsiness develop into coma, and death results from paralysis of the centers of respiration and circulation. The exact histologic picture of the cerebral lesion is therefore known.

The lesions are not altogether pathognomonic of postvaccinal encephalitis, as Professor Bok and other observers have said, because they are also met with in other forms of encephalitis due to other infections or intoxications, e. g., smallpox, chickenpox, measles and tetanus.

I return now to clinical observations, because it is important to draw attention to the various forms of the disease, to more or less exceptional symptoms and to other clinical peculiarities before entering into a discussion of the pathogenesis.¹

One of the most constant facts with regard to this type of encephalitis is the incubation period. In 108 cases recorded before 1929, this period was strikingly constant, the onset usually being observed on the tenth, eleventh or twelfth day after vaccination (chart 2). It was often related in the history that the child was ill on the seventh or eighth day with fever and agitation but recovered more or less completely, so that the encephalitis was separated from the first period of disease by several days of relative well-being. This course of events is, however, not seen regularly, because either the initial fever disappears on the seventh or eighth day or it progresses without interruption into the fever due to encephalitis.

Among the symptoms headache was rather frequent and was often associated with vomiting. Drowsiness

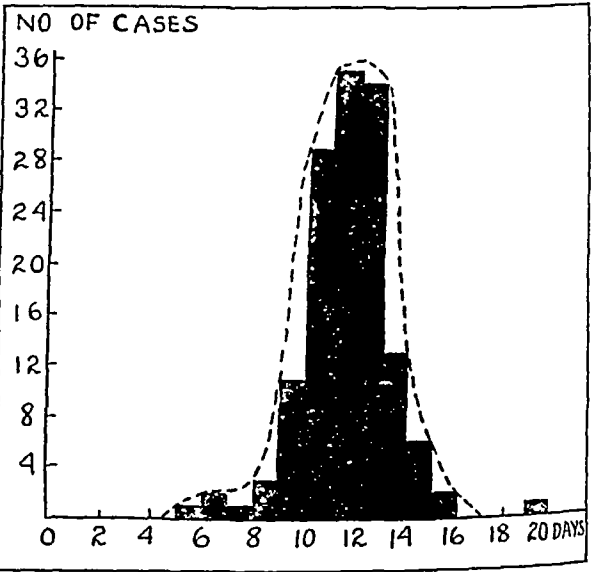


Chart 2—Incubation period of postvaccinal encephalitis

and even coma were often observed, whereas convulsions did not occur as frequently. Often meningitis was indicated by rigidity of the neck and a Kernig sign, and examination of the spinal fluid frequently confirmed the diagnosis of meningeal invasion by the finding of a high cell count, elevated pressure or a high sugar content. Paralysis of the ocular muscles or of the facial nerve or disorders of speech and deglutition were occasionally observed, whereas in other cases paralysis of the muscles of the legs and arms was present. Also in cases without paralysis the Babinski and similar reflexes were often seen, and the tendon reflexes frequently showed some abnormality.

The disease has a rather unfavorable prognosis. Of the well-developed cases almost one third have a fatal issue. Death usually occurs within a week after the onset of the disease.

In striking contrast with the bad prognosis as to life is the good prognosis with regard to sequelae. It is most exceptional if symptoms of a cerebral lesion are seen after the disappearance of acute symptoms, and

¹ Data are from the report of a special committee.

there is some reason to doubt the diagnosis of postvaccinal encephalitis in the rare cases in which a defective intelligence or hemiplegia remains after a disease resembling postvaccinal encephalitis. These characteristics are completely different from those of other forms of encephalitis or meningitis, whereas they are typical of a disease like tetanus.

EPIDEMIOLOGY

Monthly Distribution—It was interesting to study the course of postvaccinal encephalitis and to see how it spread among Dutch children of preschool age and older.

TABLE 3—Correlation of Periods of Exceptionally High Incidence and Strains of Vaccine

Period	No. of Cases	Strains
March 1925	17	15/24 H
April-July 1927	14	10/25 9/26 13/26 12/27 13/27 H
March 1927	10	6/26 A

Whereas atypical or doubtful cases of the disease possibly occurred earlier, the first definite case with all the typical symptoms was observed in June, 1923. This was the only case recorded that year. In 1924 there were seven cases, two of which occurred in March, the month when a great number of vaccinations were performed, owing to the fact that at the beginning of April children were sent to school for the first time and were obliged, at that time, to show a certificate that they had been vaccinated against smallpox.

In 1925 a real outbreak of the disease occurred in March when seventeen cases of the twenty-nine recorded that year were seen. This number is far too great to be explained by the greater number of vaccinations; it is as a matter of fact, four or five times as large as it should be.

In 1926 only five cases of the total of twenty-four occurred in March, but in 1927 ten cases were seen during March, and this number is about twice the average in relation to the number of vaccinations. The numerous cases of encephalitis in 1927 (thirty-six) were more evenly distributed although April and July showed somewhat more than the average number.

TABLE 4—Instances of More Than One Case on the Same Date in the Same Village

Cases	Province	Date	Strain
1 and 16	Cuveliers	March 7, 1927	15/24 H
18 and 20	North Holland	March 10, 1925	15/24 H
40 and 41	Friesland	March 2, 1926	20/25 A
61 and 62	South Holland	Feb. 17, 1927	3/26 R
70, 72 and 73	Cuveliers	March 27, 1927	6/26 A
84, 85 and 86	Zeland	July 9, 1927	12/27 H

A decrease in the number of cases occurred during 1928 entirely owing to the fact that compulsory vaccination was abandoned.

Thus during the period studied there was an irregular distribution of cases over the months of the year, which is not explained by the difference in the number of vaccinations.

Local Factor—The same irregularities were observed in the distribution over the different parts of The Netherlands although with the exception of Groningen and South Holland the whole country obtained the vaccine from the central institute in Amsterdam. There was a certain predilection for some provinces whereas others were almost or completely free from cases. The

number of cases in certain provinces was from two to three times the average, whereas in others it was out of all proportion to the number of vaccinations.

Another interesting point is that age appeared to have some influence, as cases were rarer among children up to 2 years of age than among older children. It is, however, difficult to say whether this factor was real, because the total number of children under 2 years of age was very small, and a diagnosis of encephalitis in this group offered greater difficulties.

Type of Vaccine—The list of irregularities should be completed by a survey of the encephalitis occurring in children vaccinated with different strains of vaccine. The record of different strains of vaccine used all over the country gives a rather irregular distribution of cases.

A special strain (15/1924) caused an unusually large number of cases, but it was used only in March, 1925, and was the only vaccine employed during that period. Vaccination with strain 6/1926 also was followed by encephalitis in a rather large number of instances, this vaccine was distributed only in March, 1927, and was the sole vaccine used.

It is necessary to mention also that in six instances more than one case occurred on the same day in the same small village after vaccination with the same vaccine. But one must not overlook the fact that most of

TABLE 5—Influence of Pigment on Reaction to Vaccination*

Animals	Maximum Reaction After Days	Edema	Necrosis	Generalization	Immunity After Days	
Black	4	—	+	±	43	7
White and gray	6.5	++	+++	++	46	6
Irradiated	4.7	±	±	—	33	6
Nonirradiated	6.2	+++	++	±	46	6

* Results of Van der Schaaf.

these cases occurred during March 1925, and March, 1927 (or July, 1927), which are the periods of high incidence of the disease.

From the last-mentioned facts there seem to be two possible conclusions:

1 The irregularities in the distribution of cases are due to local and seasonal influences.

2 The irregularities result from the use of a more dangerous vaccine during the months and in the regions of highest incidence.

It is impossible to decide between the two possibilities, notwithstanding a large amount of investigation on the pathogenesis of this type of encephalitis. In favor of the first hypothesis is the fact that cases of encephalitis have developed following the use of vaccines imported from other countries.

Differences in the frequency of the disease according to locality and time are met with in many other infectious diseases and are ascribed by some observers to a lack of sunshine. The predominance of cases during March would fit in with this explanation. Also some experiments performed in my laboratory by Dr. Van der Schaaf tend to support this view.

In comparing (naturally or artificially) pigmented animals with white animals in regard to their local reaction he found that the maximum of the reaction was more quickly reached, local edema and central necrosis were much less pronounced, generalization was less frequent and immunity was obtained at an earlier period in black rabbits and in rabbits whose skin had been

pigmented by exposure to ultraviolet radiation than in white nonirradiated animals. Such experiments might indicate a relation between pigmentation and severe infections or complications.

But the other hypothesis, that local and seasonal irregularities result from a stronger tendency of certain strains than of others to produce encephalitis, has an equal right to careful consideration.

I have often studied the difference between various lots of vaccine in regard to the production of sterile encephalitis in rabbits. Some strains easily produce

TABLE 6—Influence of *Staphylococci* on Results of Vaccination *

Vaccine	Maximum Reaction After, Days	Edema	Central Necrosis	Generalization	Immune After, Days	No. of Animals
Calf (Leyden)	42	1	3	No	31	11
Amsterdam	40	1	4	No	4	7
NeuroLapine	60	21	21	12	43	23
NeuroLapine and staphylococcus	42	1	5	3 (±)	43	20
NeuroLapine and other microbes	46	2	1	3 ±	40	8

* Results of Van der Schaaf

this encephalitis following direct injection into the brain, whereas others do not. The different types of vaccine show other differences in behavior in animal experiments. These differences are of the same order as those noted in the study of the influence of pigmentation. There is some reason to believe that part of them are due to the association of living staphylococci with the vaccine. These organisms have, indeed, a distinctly beneficial influence on the type of reaction of some strains of vaccine, such as neuroLapine.

But the question arises, do these differences in experimental results correspond to the variation in the

TABLE 7—Results Showing No Influence of Dead *Staphylococci*, Intravenously Injected *Staphylococci* and Pus on Reaction to Vaccination *

Vaccine	Maximum Reaction After, Days	Edema	Necrosis	Generalization	Immunity After, Days	No. of Animals
NeuroLapine	60	0	0	7	36	9
NeuroLapine and pus	7	4	4	4	—	4
NeuroLapine and staphylococci intravenously	6	3	3	3	43	3
NeuroLapine and staphylococci (heated to 56 C)	53	1	2	4 ±	31	0
NeuroLapine and staphylococci (heated to 65 C)	33	5	0	3	34	5

* Results of Van der Schaaf

occurrence of encephalitis in vaccinated children? This is not known because the number of children who have been vaccinated with the "mild" type of vaccine is too small.

At present the problem is based more or less on whether one believes that vaccination itself is the direct cause of the encephalitis or that the encephalitis is due to a revival of a latent virus.

The question can be formulated therefore, clinically as follows: Is postvaccinal encephalitis comparable to herpes—that is, is it due to a virus always present in the body and acting only when another disease has prepared the ground—or is it comparable to the nephritis complicating scarlet fever?

I should like to advocate the last theory. Clinicians are familiar with the idea of a complicating organic disorder in an infectious disease without the assumption that a secondary virus is always present as a causative factor. There is no reason to make an exception of postvaccinal encephalitis unless it can be proved that another virus exists, as in herpes. Like many other complications, encephalitis can follow several infections (e. g., measles), and the lesions found in this form of the disease are much like those of the postvaccinal form.

I do not see any reason to admit a different mode of causation for postvaccinal encephalitis than for a large group of other complications observed every day in the clinic.

A certain difficulty is that vaccinal virus is hardly ever found in the cerebrospinal fluid in postvaccinal encephalitis. However, one may cite many examples of severe intoxication of cerebral centers in which autopsy does not reveal the toxin locally, e. g., tetanus or diphtheria toxin. Moreover, Herzfeld recently succeeded in tracing vaccine virus in the spinal fluid of several children with postvaccinal encephalitis. It was not found in the cases reported here.

In my opinion one is as fully informed as to the causation of postvaccinal encephalitis as to that of other complications of infectious diseases (purulent meningitis, nephritis), etc., however, knowledge of these complications is incomplete.

HEMOCHROMATOSIS

REPORT OF A CASE

RICHARD GOTT, JR., M.D.

LOUISVILLE, KY.

Hemochromatosis is a chronic disease characterized by the presence of large quantities of hemofuscin and hemosiderin in the tissues, particularly in the liver and pancreas. The iron in this pigment is apparently of both endogenous and exogenous origin. The exact mechanism of this dysfunction of iron metabolism is, as yet, not known. Mallory¹ has produced a pigment cirrhosis of the liver in animals by means of the prolonged administration of copper salts and also finely divided metallic copper. In a large number of human cases there has been a history of chronic copper poisoning either through occupational contact or through the prolonged ingestion of beverages or foods containing copper.

The following case has been under observation for almost six years, during which time some interesting features have been observed, particularly those associated with the diabetic manifestations.

REPORT OF CASE

A white man, aged 42, single, a cabinet maker, admitted to the Louisville City Hospital, Jan. 10, 1927, complained of weakness, excessive thirst and polyuria of three weeks' duration. His weight had fallen from 140 to 120 pounds (63.5 to 54.4 Kg.) during this time. A few days previously his appetite had become poor and a headache had developed. His previous health was described as good, although he had been bothered intermittently for several years with mild attacks of indigestion.

From the Departments of Medicine and Pathology, University of Louisville School of Medicine.

1. Mallory, F. B., Parker, Frederic Jr. and Nye, R. N. Experimental Pigment Cirrhosis Due to Copper and Its Relation to Hemochromatosis. J. M. Research 42: 461-490 (Oct.) 1921. Mallory, F. B. Hemochromatosis and Chronic Poisoning with Copper. Arch. Int. Med. 37: 336-362 (March) 1926.

tion described as "gas in the stomach" and "heartburn." He stated that he did not use alcohol, and nothing unusual was discovered concerning his habits.

The patient was well developed but poorly nourished and looked his stated age. His respirations were increased in depth and there was an acetone odor to his breath. His temperature was 98 F, pulse 80, respiration rate 26, blood pressure 90 systolic and 60 diastolic. There was slight deviation of the nasal septum. His upper teeth had all been removed. The lower teeth were carious and the gums were infected. The liver was not described as enlarged, although the subsequent course and observations indicate that it probably was. No abnormality in the appearance of the skin was described. The urine was strongly positive for sugar, acetone and diacetic acid. The blood sugar was 0.248 per cent and the carbon dioxide combining power of the blood was 31 volumes per cent. The red blood count was 3,800,000 and hemoglobin, 75 per cent. The white cell count was 6,200, with a normal differential count.

The acidosis responded readily to treatment with insulin and sodium bicarbonate. Considerable difficulty in stabilizing the blood sugar was encountered. It usually varied from 0.2 to 0.3 per cent, and the urine was frequently positive for sugar. Attempts to lower the blood sugar level further invariably resulted in insulin reactions, which were corrected promptly by dextrose given either by mouth or intravenously. During his stay in the hospital a superficial infection of the left hand developed, which responded readily to treatment. He was discharged April 18, on a maintenance diet, receiving 26 units of insulin daily.

Some phases of his disease were encountered during most of his subsequent admissions. The same difficulty in stabilizing the blood sugar that has been mentioned was always encountered. The blood sugar was as high as 0.465 per cent, but usually varied from 0.2 to 0.3 per cent. His acidosis was always corrected over a period of from six to twenty-four hours, requiring from 100 to 300 units of insulin, depending on the severity of the acidosis. The acidosis responded promptly to therapy when insulin was used alone or when it was used in conjunction with sodium bicarbonate. His weight remained near 120 pounds. The red blood cell count varied from 3,450,000 to 4,250,000, and the hemoglobin from 70 to 80 per cent. The urine occasionally contained a few pus cells. Kidney function was normal for dye elimination.

The blood Wassermann reaction was negative. The maintenance diet consisted of 40 Gm of carbohydrate, 70 Gm of protein and 230 Gm of fat. He followed this diet fairly well and took the amount of insulin that had been recommended at the time of discharge, however, he did not cooperate in returning to the diabetic clinic and would come to the hospital only when in considerable difficulty.

His remaining teeth were all removed during subsequent hospitalization.

He was admitted to the hospital again, September 19. He had been unable to obtain insulin during the preceding two weeks and on admission was in moderately severe acidosis. The examiner now recorded that the liver was enlarged almost to the umbilicus; this enlargement was present to about the same degree on all later admissions. The skin was described as bronzed especially in the region of the neck and shoulders. This bronzing was the subject of considerable discussion during later visits. It was felt by some members of the staff that there was a noticeable decrease in the degree of pigmentation during later admissions; in fact on the final admission it was difficult to say that there was any abnormality at all in the appearance of the skin.

Roentgen examination of the chest now showed some increase in lung markings; this was thought to be indicative of chronic fibroid tubercles. No clinical evidence of activity could be demonstrated. Roentgen examination of the gastrointestinal tract was negative. His course was uneventful following the correction of the acidosis and he was discharged Feb. 24, 1928, receiving 57 units of insulin daily.

About one week prior to his third admission March 12 a head cold developed. Four days later pain began in the left ear and it began to discharge on the day of admission. He was mildly acidotic and pus was flowing through a perforation in the left ear drum. The drum was incised and his condition improved.

On the thirty-eighth day of hospitalization a tender area developed in the right gluteal region, which was thought to be a beginning abscess. This subsided, however, and incision was not necessary. On the forty-seventh day of hospitalization, pain again developed in the left ear, and incision of the drum released serosanguineous fluid. The incision had to be repeated a week later, similar fluid being obtained. During the next two weeks he had a low grade fever and tenderness developed over the left mastoid. Roentgen examination revealed destruction of these cells. A simple mastoidectomy was performed, May 3. Cultures from the middle ear and mastoid yielded *Streptococcus haemolyticus* and *Staphylococcus albus*. His postoperative course was uneventful and he was discharged, September 16, receiving 45 units of insulin daily.

Ten days previous to his fourth admission Jan. 7, 1929, a head cold and pain in the right ear developed. The ear began to drain the following day. Examination revealed a perforation in the right ear drum through which serosanguineous fluid was flowing. His diabetic condition was satisfactory. The ear drum was incised, and the patient's general condition improved. He was discharged, February 8, receiving 51 units of insulin daily.

He was readmitted, July 18, complaining of a watery diarrhea of three days' duration. He had eaten little and taken no insulin during this time. He was moderately acidotic. The diarrhea subsided in six days, the stools were watery and foul but contained no blood, mucus or pus. Culture of the feces produced no pathogenic organisms. He was discharged, August 6, receiving 45 units of insulin daily.

August 10, he was readmitted in a mild insulin reaction. His course was uneventful and he was discharged, September 13, receiving 45 units of insulin daily.

Two weeks previous to his seventh admission, Nov. 10, 1930, pain and swelling had developed in the right knee following a slight injury. Roentgen examination revealed changes consistent with infectious arthritis. The knee improved slowly and after six weeks he was allowed to bear weight on it. He was discharged, Jan. 13, 1931, receiving 45 units of insulin daily.

The patient's eighth and final admission was on Dec. 10, 1932. Ten days previously he had contracted a cold and three days later pain and discharge developed in the right ear. He had become steadily worse, and during the two days prior to hospitalization he had eaten little and taken no insulin. He was toxic and in moderately severe acidosis. Pus was flowing through a perforation in the right ear drum. Physical changes at the base of the right lung were consistent with pneumonic consolidation. The acidosis was corrected without difficulty, and the following day his condition seemed much improved. He grew worse during the following two days, however, and died on the fourth day of hospitalization.

AUTOPSY

There was no bronzing of the skin.

The left pleural cavity contained 100 cc. of seropurulent fluid, the right one 250 cc of similar fluid.

The heart muscle was light colored and soft. The left coronary was markedly sclerotic with atheromatous plaques. The left anterior branch was almost occluded. The papillary muscles were atrophic. Sections revealed some sclerotic plaques with a few hypertrophic muscle fibers at the periphery. The larger vessels showed some lipid deposit with hyperplasia of the connective tissue.

The left lung weighed 720 Gm, the right lung weighed 1200 Gm and was reddish. The increase in weight was due to edema and consolidation especially in the posterior portion and more marked on the right. Sections revealed the air spaces completely filled with recent inflammatory exudate consisting of fibrin leukocytes, serous fluid and some blood. Sections taken from the upper right lobe showed areas of caseous necrosis surrounded by a dense scar tissue infiltrated with lymphocytes, plasma cells and a few endothelial cells. There was an occasional foreign body giant cell. The pleura was covered by a recent firm fibrinopurulent exudate.

The mucosa of the stomach and bowel was slightly brownish. In sections taken from the stomach and upper part of the small bowel the surface epithelium appeared sloughed so it could not be studied. In the deep part of the glands in which the

epithelium was preserved there was a dense deposit of brown pigment in the cytoplasm. A few connective tissue cells of the stroma were similarly pigmented but the leukocytes were not.

The weight of the liver was 1,950 Gm. Just beneath its capsule some dark brown pigment was noted, scattered diffusely. A sectioned surface revealed an abundant amount of similar brownish black pigment. There was some nutmeg mottling. Sections revealed atrophy of the liver cells about the central veins with some sclerosis. There was an abundant deposit of dark brown pigment found between the liver cells, in the cytoplasm of the endothelial cells and also in the liver cells.

The lymph nodes of the mediastinum and also those about the pancreas were slightly enlarged and brownish. Sections revealed an abundance of pigment similar to that found in the liver, especially in the lining cells of the sinuses and in endothelial cells that had infiltrated the lymphoid tissue.

The weight of the spleen was 200 Gm. It was definitely browner than normal and firm in consistency. The capsule was thickened and cartilaginous. Sections revealed an increase in connective tissue with a moderate amount of blackish brown pigment deposited in the cells lining the sinuses and also in endothelial leukocytes.

The pancreas weighed 35 Gm. It was a chocolate brown and slightly firmer than normal. Sections revealed an abundant deposit of brownish black pigment in between the epithelial cells and also in the cytoplasm of many of the cells of the acini. Islands of Langerhans were found with great difficulty. Many of those recognized were small and atrophic. In the islet cells there was an abundant deposit of brown pigment. In localized areas there was some fibrosis about the islets and also about the acini. There seemed to be more pigment however, in the portions which were not fibrotic. Occasional islets were seen which were surrounded by a zone of scar tissue.

Sections of the suprarenal revealed an abundant deposit of brownish pigment in the epithelial cells and also in the stroma but it was not recognized grossly. There was some scarring of the stroma.

The kidneys were normal in weight. The capsules stripped readily and were slightly brown. Sections revealed cloudy swelling of the epithelial cells and a slight deposit of brownish pigment in the stroma.

Sections of the brain revealed no pigmentation, only swelling of the nerve cells.

Skin sections did not show pigment deposit.

Smears and cultures of the cloudy pleural fluid revealed pneumococcus type I in pure culture. The same organism was recovered from the purulent exudate of the middle ears.

Special stains were made of the pancreas, liver and lymph nodes to determine the type of pigment. These stains revealed the absence of hemofuscin and the presence of iron in all the granules. This indicates that the pigment was hemosiderin entirely.

Stains and chemical analysis of the liver and pancreas revealed no copper. The qualitative test for copper consisted of digestion of the tissue and precipitation with ammonium sulphide. Quantitative analysis for iron revealed 202 Gm of pure iron in the liver (the normal amount is 0.3 Gm). No excess of iron was found in the lungs.

COMMENT

The patient's disease evidently began some years previously as hemochromatosis. At the time of death there was an abundance of hemosiderin in the liver, pancreas, lymph nodes and suprarenals. Apparently the pigmentation of the pancreas resulted in necrobiosis of the islet cells, so that there was a deficiency of internal gland secretion, resulting in diabetes.

The immediate cause of death was bronchopneumonia, pneumococcus type I.

The disappearance of the skin bronzing which was thought to be observed in this case is unusual. Boland and Curran² have emphasized the lack of dependability

of visible skin changes as a means of diagnosis. Accepting the belief that skin changes are a relatively late manifestation of hemochromatosis, the gradual disappearance of skin pigment as observed clinically and the absence of abnormal skin pigment as demonstrated at autopsy in this case are difficult to explain.

SUMMARY

In a case of hemochromatosis which was under observation for almost six years, diabetes was characterized by insulin resistance, difficulty in stabilization and an unusual susceptibility to infection. It is felt that insulin prolonged the patient's life four or five years.

Louisville City Hospital

Clinical Notes, Suggestions and New Instruments

PROGRESSIVE POSTOPERATIVE GANGRENE OF THE ABDOMINAL WALL FOLLOWING APPENDECTOMY

W I BROWN M D C P BROWN M D AND
J L MURPHY M D EL PASO TEXAS

Cases of postoperative or postinjectional gangrene of the skin of a progressive nature are so numerous in the literature that it is difficult to make a review of one certain variety, owing to the variation of nomenclature.

This report is limited to a progressive gangrene of the skin and subcutaneous tissues of the abdominal wall following laparotomies and chiefly following operations for ruptured appendixes. The latter condition is rather distinctive from closely related progressive gangrene elsewhere and presents so often the same characteristics that it can almost be classed as a clinical entity.

H D, a man aged 50, a postal clerk in a neighboring city, had had attacks of indigestion characterized by sour stomach, heartburn, constipation and headaches since childhood. The usual cathartics were resorted to with fair results. There was never a definite attack of appendicitis until the present illness. At the age of 24 he was sick two months with inflammatory rheumatism and again for one month at the age of 31. With the last attack he was aware of a heart lesion, and, although it has never troubled him, he was prevented from enlisting in the army in 1918 on this account. The remainder of the past history is irrelevant.

The present illness began as a "bilious attack" about Jan 1, 1932. There was a dull pain in the right flank, which gradually increased in intensity but did not confine him to bed. On the afternoon on the third day nausea and vomiting appeared and lasted until midnight. There was slight fever. The pain and tenderness never localized over the appendix region to the extent of justifying a definite diagnosis. Intestinal influenza was suspected by the local physician. On the seventh day the patient was up and about. On the twelfth day the fever and pain returned and at this time a mass was felt in the region of the appendix. The pain and tenderness was now localized at McBurney's point.

A local surgeon operated and found a definite walled off abscess with the greater portion of the appendix sloughed away. The stump of the appendix was removed and a rubber drain was used. Convalescence was uneventful until the fifth postoperative day when the edges of the skin around the rubber drain began to turn a dusky red and later became dark. This necrosis progressed steadily in spite of various kinds of wet dressings, including boric acid and mercuric chloride. The dressings were very painful and the patient became more and more emaciated. We saw him on the ninth day after necrosis was noted. The ulcer then measured $3\frac{1}{2}$ by $4\frac{1}{2}$ inches with the long axis in the line of the incision of the previous appendectomy (fig 1).

We advised complete excision of the ulcerating area by cautery. By this time the patient had lost 20 pounds (9 kg) and,

² Boland B F and Curran I F Hemochromatosis. Two Atypical Cases Occurring in Brothers J A M A 97:379-381 (Aug 8) 1931

with an enlarged heart from mitral stenosis, was a rather poor operative risk for such an extensive procedure.

The ulcer base appeared to extend only to the fascia, and exuberant granulations were present. The edge was formed by a strip of necrotic and necrosing skin about 2 cm wide which was undermined and beneath which pus could be easily expressed. More peripherally was an area about 3 cm wide in which the skin was red, indurated and slightly raised above the normal skin. This zone appeared somewhat like erysipelas but not with as well defined a margin. At the region from which the drain was removed there was a depression but no evidence of a fecal fistula. There was no normal skin left at the site of the incision as others have so frequently reported.

After preoperative supportive measures were carried out, the ulcer was surrounded with the electrocoagulation knife, which was kept well outside the red zone into the normal skin. The dissection was carried down to the fascia and the ulcer along with its base removed in one piece, with cautions of further contaminations of raw surface by the pus from the ulcer. The bleeding was controlled entirely by coagulation. This left a denuded area that extended almost to the umbilicus medially, Poupart's ligament inferiorly, well past the anterior superior iliac spine laterally and almost to the costal margin superiorly, with healthy fascia as a base except for a small depression at the site where the rubber drain had been (fig 2).

This area was further cauterized. A gauze dressing saturated with an ointment composed of 5 per cent boric acid and 5 per cent zinc oxide in petrolatum was applied and this was covered with an electrical pad continuously. In a few days, healthy granulations appeared. On the tenth day, following forty-eight hours of hot boric acid compresses, the ulcer was covered with skin grafts.

There were two small recurrences of necrosis at the upper border of the wound, owing to the fact that we had not cut far enough out into the normal skin at these points. These were easily controlled by touching them with the cautery.

The patient's general condition and outlook improved almost immediately after the excision of the ulcer, but on the sixteenth day following the excision of the ulcer convalescence was interrupted by intestinal obstruction and auricular fibrillation. Enemas and turpentine stupes would not relieve the obstruction, so that operation was inevitable. The question arose as to where we would make the incision. The midline would be too far from the original abscess, where we felt the obstruction

it gradually granulated over so that five weeks after the excision of the ulcer the patient was discharged from the hospital with only one small area of granulation. He was slow in regaining his weight and strength but this was partially due to his heart lesion. A check up six months and one year later revealed a complete healing of the area. At the site of the last operation there is a weakness of the abdominal wall, but this is without subjective symptoms.

Smear and culture examinations taken from underneath the necrotic edge prior to operation showed gram-negative, motile



Fig 2—After excision

bacilli, gram-positive *Staphylococcus aureus* and gram-positive diplococci. We did not search in the red zone for streptococci, but a microscopic section revealed a marked inflammatory process with extensive polymorphonuclear infiltration.

REVIEW OF THE LITERATURE

Cullen of Baltimore reported the first case of progressive postoperative gangrene of the skin following appendectomy in 1924, or only nine years ago.

Lynn¹ of Baltimore, up to November, 1931, had seen or collected from the literature twenty-one such cases, fifteen in males and fourteen following operation from appendiceal abscess or peritonitis. Ten of the patients were above 45 years of age. The condition is certainly more common following laparotomies, but Christopher and Ballin² each reported progressive gangrene of the skin following thoracoplasty in 1924 and 1931, respectively.

Meleney³ of New York, who probably has done more work along this line than any one else, saw fourteen cases of gangrene of the skin following scarlet fever antitoxin injections in a period of five years. He has also been enlightening on hemolytic streptococcal gangrene of the scrotum and penis. The last two, however, do not seem to be the same type of necrosis as that of the abdominal wall after appendectomy.

As to the etiology, very little is known. The more common organisms found are nonhemolytic streptococci, hemolytic staphylococci and diphtheroids, especially the two former, and usually the streptococci are in the red swollen tissues while the staphylococci are back at the necrotic margin. Meleney thinks



Fig 1—Before excision

was located while on the other hand we did not wish to cut through the new skin grafts which were just beginning to grow.

Disregarding the latter the incision was made just medial to the original appendectomy wound. Realizing that the grafted area was infected we sterilized the operative field as well as possible with iodine and sewed towels previously saturated in 1:1,000 mercuric chloride solution to the underlying muscles before the peritoneum was opened. The obstruction was corrected and our wound closed as well as possible with skin grafts sutured through muscle, fascia and skin grafts. Considerable sloughing occurred at the site of our wound but

1 Lynn, F. S. Postoperative Gangrenous Ulcer of Abdominal Wall. *J. A. M. A.* 97:1497 (Nov. 26) 1931.
2 Ballin, Max and Moore, P. F. Progressive Postoperative Gangrene of Skin. *Am. J. Surg.* 11:81 (Jan.) 1931.
3 Meleney, F. L. Hemolytic Streptococcal Gangrene Following the Administration of Scarlet Fever Antitoxin. *Ann. Surg.* 91:267 (Feb.) 1920.

there is a symbiotic relation between these two organisms that is necessary to produce the condition. Gangrene would not occur except for the staphylococci, while the streptococci seem to prepare the way for the staphylococci.

The characteristics of the lesions may be summarized as follows. On the seventh to the fourteenth day after operation, at the skin margins or at the stitch holes, the skin becomes dully red and rapidly becomes edematous, dark and necrotic. The edges become undermined and the sloughing tissue becomes white from beneath and exudes a seropurulent discharge. Beyond the sloughing zone is a dark red edematous zone about 1 to 1½ inches in width that spreads at about the rate of 2 cm a day. The original scar may or may not be involved. It may even retain a halo of normal skin about it. The base of the ulcer is very granular, the granulations resting on the fascia but not involving it or the underlying muscles. In no case reported has there been a fecal fistula.

The symptoms are a slight increase in temperature and leukocytosis. Pain may be of a mild to severe burning, especially when the dressings are changed. There is a decided loss of appetite and a progressive emaciation. The depressed emotional state of the patient is quite noticeable.

In the diagnosis, simple stitch abscesses, erysipelas and gas bacillus infection must be considered. In erysipelas the onset is sudden and there is usually a chill. The red area spreads rapidly, but there is no gangrene. In gas bacillus infections the onset is sudden, prostration is marked and there is usually crepitation.

As to the prognosis of the twenty-one cases collected by Lynn,¹ only one patient died of gangrene and the usual course from onset to healing of the grafts varied from two to twenty-two months.

To date, the only satisfactory treatment has been the electrotherm knife, the incision being carried well out into the normal tissue and completely undermining the base. This controls bleeding and helps to prevent further spreading of the infections. All kinds of drug medication, lights and x-ray treatments have been tried but to no avail. About seven to ten days after the ulcer has been removed skin grafting can usually be done. During this time hot boric acid or saline compresses are used.

404 Roberts Banner Building

TOXIC CIRRHOSIS OF THE LIVER DUE TO HYDROCIN (50 PER CENT CINCHOPHEN)

DONALD W. INGHAM, M.D., LANCASTER, PA.

Since cinchophen has been used as an analgesic, particularly in the treatment of arthritis and allied conditions, there have been many contributions to medical literature regarding its toxicity and the signs and symptoms subsequent to the toxic action. A brief concise review of the literature on this subject was given by Weis¹ in 1932. Since that time there have been numerous reports, but the following case fits in well with the cases reported by Parsons and Harding—

REPORT OF CASE

Mrs. F. B., aged 63, was admitted in coma, Sept. 9, 1933, at 4:55 p. m., in the service of Drs. J. L. Atlee, Jr., and Harvey Seiple, in the Lancaster General Hospital. The history was obtained from one of the patient's daughters. The patient had been sick for over a year with arthritis and had been treated by a physician with some degree of improvement, but in June of this year she discontinued supervised medical treatment and on the advice of a friend secured a bottle of Renton's Hydrocin tablets from New York. From that time until the time of admission she had taken three bottles of fifty and nearly all of the fourth. Thursday, September 7, the patient noticed a yellow discoloration of the skin. The next day she had a "pain in the abdomen." A physician was called who advised confinement to bed. Saturday, September 9, she arose and came downstairs and at 9:30 a. m. had a severe pain in the upper part of the abdomen. At this time a hypodermic of morphine

sulphate was given following which she slept. Early in the afternoon the family heard her moaning and was unable to rouse her. Since Thursday the jaundice had become progressively worse. She was then brought to the hospital. It is interesting to note that, when the Hydrocin tablets were begun, the patient had a severe gastric upset consisting of pain in the epigastrium, nausea and vomiting, also that a rash developed over the face and forehead after each dose of the medicine. She finally discovered that, by taking half the prescribed dose, i. e., half a tablet four times a day, these symptoms were not as severe.

The family history was essentially negative.

The patient had always enjoyed good health with the exception of an attack of pneumonia eleven years before and the present condition. There was no history of indigestion or any symptoms referable to liver dysfunction. She had had five pregnancies, the youngest child being now 31. She had had no operations nor accidents.

On examination, the temperature was 103.8 F., the pulse 154 and thready, the respiration rate 16 and shallow and the blood pressure 78 systolic, 50 diastolic. The patient was comatose and showed almost a bronze coloration of the skin. There were macular and papular eruptions over the face and forehead. The hands and feet showed evidence of arthritis deformans. The heart and lungs were normal, the area of liver dullness was decreased.

The laboratory data showed the blood sugar on two successive readings to be 10 and 0, carbon dioxide, 22, urea, 175. The urine was deeply bile colored, showed a heavy trace of albumin, was 4 plus positive for acetone and bile, and showed occasional finely granular casts.

Dextrose and insulin were given at once and stimulation was begun, but despite all treatment the coma deepened, the respiration and pulse became more rapid and the patient died at 11:10 p. m., the day she entered the hospital.

Autopsy showed a small liver weighing 800 Gm. Its surface was studded with milky yellow elevations surrounded by red liver tissue. On section, the liver cut with increased resistance and was flabby. The cut surfaces were red with a patchy distribution of yellow foci of necrosis, which were slightly raised above the cut surface. The liver was tough and not friable. The gallbladder was distended but contained no calculi, and the ducts were patent. Microscopically the liver showed marked destruction of the parenchyma with only small islands of relatively unchanged liver tissue remaining. The remaining liver cells appeared swollen and granular. There was extensive proliferation of bile duct epithelium within the mass of necrotic tissue. Between the islands of liver cells, fibroblastic proliferation was also quite marked. Hemorrhage and phagocytosis of blood and bile pigments were seen throughout.

COMMENT

A report of the Bureau of Investigation³ contains the results of an analysis made by the American Medical Association Laboratory, of "Renton's Rheumatic Tablets." These were found to contain 48.8 per cent of cinchophen. At that time the name was changed to Renton's Hydrocin. Weis reviews eighty-nine cases of hepatotoxicosis, fifty-two of the patients recovered and thirty-seven died. Thirty of these cases were proved by autopsy to be due to cinchophen and its compounds. Harding and Parsons⁴ suggest that the symptoms be divided into four groups: (1) cutaneous manifestations, pruritus, urticaria, and macular and papular eruptions, (2) an anaphylactoid reaction characterized by neurocirculatory disturbance, rapid pulse and low blood pressure, (3) gastro-intestinal disturbances including simple aphthous ulcers in the mouth, pyrosis, nausea, vomiting and diarrhea and (4) liver involvement as indicated by jaundice. Weis comments that the toxic manifestations have no relation to the amount of the drug ingested but is probably due to an idiosyncrasy for the drug.

SUMMARY

1. A fatal case of toxic cirrhosis of the liver due to Renton's Hydrocin (50 per cent cinchophen) manifested three of the symptoms outlined by Parsons and Harding.

1. Weis, C. R. Toxic Cirrhosis of the Liver Due to Cinchophen Compounds: Report of Three Fatal Cases. J. A. M. A. 99:2124 (July 2) 1932.
2. Parsons, Lawrence and Harding, W. G. 2d. Fatal Cinchophen Poisoning. Ann. Int. Med. 6:514-517 (Oct.) 1932.

3. Renton's Hydrocin Tablets. J. A. M. A. 96:209-210 (Jan. 17) 1931.
4. Parsons, Lawrence and Harding, W. G. Jr. Am. J. M. Sc. 181:115-125 (Jan.) 1931.

2 In view of the increasing number of reports of toxic cirrhosis due to cinchophen and its compounds, a plea is made for careful supervision in the administration of this drug and immediate discontinuance of the drug when any of these symptoms develop

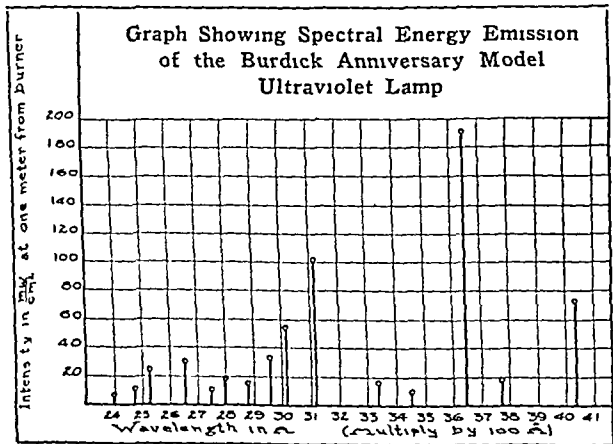
528 North Lime Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
H A CARTER Secretary

BURDICK ANNIVERSARY MODEL ULTRAVIOLET QUARTZ LAMP ACCEPTABLE

The Burdick Corporation of Milton, Wis., is the manufacturer of this unit. The burner uvarc mercury quartz type is similar in construction to that used in other Burdick ultraviolet lamps. The electrodes are sealed in by graded fused seals. Ordinarily the burner does not need to be tilted when starting but merely shaken slightly. When operated on alternating current, it is self rectified. It is available for either alternating or direct current. The reflector is chromium plated interiorly and the wiring is concealed. It is adjustable to vertical and



Emission characteristics of Burdick Anniversary Model Ultraviolet Quartz Lamp

horizontal positions. The adjustable stand permits the lamp to be at any height between 40 and 72 inches from the floor. The entire unit is portable. It is finished in a combination of brown and ivory.

The ultraviolet radiation generated by this lamp is of sufficient intensity to produce a first degree erythema on the average skin in 1 minute and 1 half at a distance of 30 inches.

The operating characteristics are as follows:

Alternating Current		Direct Current	
Line voltage	105-12	Line voltage	105-125
Starting amperage on line	8.0	Starting amperage	6.6
Operating amperage on line	5.0	Operating amperage	3
Normal burner voltage across anodes	164	Maximum burner voltage	~2
Operating watts from line	400	Start burner voltage	18
Cathode burner operating amperage	4.6		
Maximum burner equivalent voltage	50		
Start burner voltage	18		

The curve in the accompanying chart shows the emission characteristics of the lamp.

When ordering this unit the type of current available should be indicated.

The Council on Physical Therapy declares the Burdick Anniversary Model Ultraviolet Quartz Lamp eligible for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

PHENOBARBITAL SODIUM (See New and Non-official Remedies, 1933 p 96)

Phenobarbital Sodium-Abbott—A brand of phenobarbital sodium-N N R

Manufactured by the Abbott Laboratories North Chicago Ill. No U S patent or trademark

ABBOTT'S HALIVER OIL, PLAIN (See THE JOURNAL, Nov 18, 1933, p 1634)

The following dosage form has been accepted

Abbott's Haliver Oil Plain Capsules 3 minims Each capsule contains Abbott's haliver oil plain 3 minims

POLLEN EXTRACTS-MULFORD (See New and Nonofficial Remedies 1933, p 37)

The following additional products marketed in 5 cc vials containing 2000 pollen units per cubic centimeter, have been accepted

Arizona Ash Pollen Extract Mulford Barnyard Grass Pollen Extract Mulford Birch Pollen Extract Mulford Chrysanthemum Pollen Extract Mulford Hemp Pollen Extract Mulford Mesquite Pollen Extract Mulford Papa e Pollen Extract Mulford Primrose Pollen Extract Mulford Arizona Walnut Pollen Extract Mulford Sycamore Pollen Extract Mulford Saw Grass Pollen Extract Mulford Sarcocort Pollen Extract Mulford Prairie Sage Pollen Extract Mulford and Pasture Sage Pollen Extract Mulford

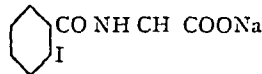
PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT

PAUL NICHOLAS LEECH, Secretary

HIPPURAN

Hippuran is a product of the Mallinckrodt Chemical Works, proposed by Swick¹ for intravenous and for oral urography. Its chemical constitution is stated to be sodium ortho-iodohippurate



Hippuran was submitted for consideration by the Council at the request of the Council on Scientific Assembly in order that Dr Swick might present a report on this preparation at a section of the Assembly in Milwaukee.

Sodium ortho-iodohippurate contains 38.8 per cent of iodine, it is said to be soluble in less than its own weight of water and to be stable in aqueous solution. It was chosen as a promising agent for visualizing the urinary tract, in view of the fact that hippuric acid normally occurs in the urine following the ingestion of benzoic acid representing a conjugation of benzoic acid with glycine. Similarly the ingestion of ortho-iodobenzoic acid is said to result in the appearance of ortho-iodohippuric acid in the urine.

Rabbits are stated to tolerate from 2 to 25 Gm of Hippuran per kilogram as 30 per cent solution administered intravenously over a period of ten minutes. Tissues of rabbits have shown no evidence of injury from twenty-four hours to four months after injection. The substance is said to be excreted unchanged in the urine. From 60 to 66 per cent of the injected iodine is stated to be recoverable from the urine in the first hour from 70 to 80 per cent in two hours and from 90 to 95 per cent within eight hours after injection. Hippuran has been used by Swick by the intravenous route in 125 patients and by the oral route in 14. Usually from 10 to 15 Gm has been administered by vein in 40 per cent aqueous solution over a period of five minutes. Swick recommended that the first film

¹ Swick, Moses. Surg. Gynec. & Obst. 56 (2) (Jan.) 1913

be exposed ten minutes after injection and that two subsequent roentgenograms be taken at twenty minute intervals. No reactions have been noted except a sensation of generalized warmth, such as has been reported with other products used for intravenous pyelography. With a dose of 30 Gm, occasional vomiting has occurred. By the oral route, with doses of from 10 to 15 Gm dissolved in simple syrup, diagnostic pictures are reported to have been obtained 90 and 135 minutes after administration, in seven of fourteen cases.

As the product has not yet been sufficiently widely employed adequately to determine its value, the Council has voted to defer further consideration of Hippuran until more evidence has accumulated with respect to its clinical usefulness, at which time the product will be examined by the A M A Chemical Laboratory.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG Secretary

OMAR WHEAT CEREAL

(WHEAT FARINA WITH WHEAT EMBRYO ADDED)

Manufacturer—Omaha Flour Mills Company, Omaha

Description—A mixture of wheat farina and wheat germ with a small amount of bran.

Manufacture—The farina is heat treated at a low temperature to destroy any insect infestation, the wheat germ is similarly treated separately, at 70 C for fifteen minutes, after which it is promptly cooled. The farina and germ are mixed in formula proportions and automatically packed in cartons.

Analysis (submitted by manufacturer) —

	per cent
Moisture	11.8
Ash	1.3
Fat (ether extraction method)	2.8
Protein (N × 5.7)	13.3
Crude fiber	1.0
Carbohydrates other than crude fiber (by difference)	69.8

Calories—34 per gram 97 per ounce

Claims of Manufacturer—Essentially a carbohydrate food but containing good body-building proteins, recommended for infant feeding and "smooth" diets. Used as a breakfast food, cooks in from two to three minutes. Excellent source of vitamin B and a good source of G.

FAIRWAY WHITE LABEL BRAND STRAINED BEETS, CARROTS, CELERY, GREEN BEANS, GREEN PEAS, SPINACH, TOMATOES, PRUNES FLAVORED WITH LEMON JUICE, AND STRAINED VEGETABLES WITH CEREAL AND BEEF BROTH

UNSEASONED

Distributor—Twin City Wholesale Grocer Company, St Paul and Minneapolis

Packer—The Larsen Company, Green Bay, Wis

Description—Respectively sieved beets, carrots, celery, green beans, green peas, spinach, tomatoes, prunes flavored with lemon juice, and vegetables (carrots, potatoes, tomatoes, peas, beans, spinach) with pearl barley and beef extract prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vege-

tables and fruits (THE JOURNAL, July 1, 1933, p 35, July 8 1933, p 125, July 22, 1933, p 283, July 29, 1933, p 366, Aug 12, 1933, p 525, Aug 19, 1933, p 605, Aug 26, 1933, p 675, Sept 2, 1933, p 779)

VITAMIN D FORTIFIED PASTEURIZED MILK (150 STEENBOCK VITAMIN D UNITS PER QUART) ADVERTISING OF SOUTHWEST DAIRY PRODUCTS COMPANY

Distributor—Southwest Dairy Products Company, San Antonio and Wichita Falls, Texas

Description—Advertising for bottled pasteurized grade A milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil), contains 150 Steenbock vitamin D units per quart.

Preparation—The milk complies with the requirements specified by the laws of the state of Texas and the city of San Antonio or other municipalities in which it is distributed.

See this section for Vitamin D Fortified Pasteurized Milk of W J Kennedy Dairy Company, Detroit, for description of fortification with vitamin D (THE JOURNAL, July 1, 1933, p 34). The milk is pasteurized by the standard procedure of holding at 62 C for not less than thirty minutes, is immediately cooled to 4 C and automatically bottled.

Analysis (submitted by manufacturer) —

	per cent
Moisture	87.0
Total solids	13.0
Ash	0.7
Fat	4.2
Protein (N × 6.38)	3.3
Lactose (by difference)	4.8

Calories—0.7 per gram 20 per ounce

Ingredients—The vitamin D concentrate used in the preparation of this vitamin D milk and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent.

Claims of Manufacturer—A vitamin D fortified antirachitic pasteurized milk having the natural flavor and food values of standard pasteurized milk.

DAVIDSON'S GENUINE 100% WHOLE WHEAT BREAD

Manufacturer—Davidson Baking Company, Portland, Ore

Description—A whole wheat bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p 817), prepared from whole wheat flour, water, milk, honey, salt, butter and yeast.

Analysis (submitted by manufacturer) —

	per cent
Moisture	35.2
Ash	1.6
Fat (acid hydrolysis method)	4.3
Protein (N × 6.25)	10.4
Crude fiber	1.9
Carbohydrates other than crude fiber (by difference)	46.6

Calories—2.7 per gram 77 per ounce

Claims of Manufacturer—Conforms to the United States Department of Agriculture definition and standard for whole wheat bread.

CAPITANA FLOUR (BLEACHED)

Manufacturer—Texas Star Flour Mills, Galveston Texas

Description—Hard red winter wheat "1st clear" flour, bleached.

Manufacture—Selected hard red winter wheat is cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Flour streams not chosen for patent grades are blended and are bleached with nitrogen trichloride (one ninth ounce per 196 pounds) and with a mixture of calcium phosphate and benzoyl peroxide (1 part to 50,000 parts flour).

Claims of Manufacturer—For general baking.

**EUREKA QUICK-ACTING DOUBLE-ACTING
PURE BAKING POWDER**

Manufacturer—Eureka Products Company, Louisville, Ky

Description—Baking powder containing corn starch, sodium bicarbonate, sodium aluminum sulphate calcium acid phosphate, and a small quantity of dried white of egg

Manufacture—The ingredients complying with definite specifications of purity are thoroughly mixed in formula proportions. Each batch is tested by the laboratory for total carbon dioxide and the neutrality of the residue formed after liberation of the leavening gas, carbon dioxide. The mixture is automatically packed in tins

Analysis (submitted by manufacturer) —

	per cent	
Total carbon dioxide (CO ₂)	15.2	
Available carbon dioxide (CO ₂)	14.2	
Residual carbon dioxide (CO ₂)	1.0	
Phosphorus as P ₂ O ₅	7.9	as P 3.45
Calcium oxide (CaO)	3.11	as Ca 2.22
Sulphuric anhydride (SO ₃)	12.81	as S 5.11
Aluminum oxide (Al ₂ O ₃)	4.12	as Al 2.18
	parts per million	
Arsenic (As)	0.2	
Lead (Pb)	less than 2	

Calories—1.5 per gram 43 per ounce

Claims of Manufacturer—For use in all baking and cooking recipes calling for baking powder. The product and ingredients conform to United States Department of Agriculture requirements as expressed in its definition and standard for baking powder. The two acid reacting ingredients for liberation of the leavening gas because of their different solubilities, produce a "double leavening action" in the dough. The first action releases a portion of the leavening gas in the cold dough, the second releases the remaining gas in the heated dough in the oven.

**RIVAL BEETS, CARROTS, CELERY, GREEN
BEANS, PEAS, SPINACH, TOMATOES,
PRUNES FLAVORED WITH LEMON
JUICE, AND VEGETABLE SOUP
WITH CEREAL AND BEEF
BROTH**

STRAINED, UNSEASONED

Distributor—Rival Foods Incorporated, Cambridge Mass

Packer—The Larsen Company, Green Bay Wis

Description—Respectively sieved beets, carrots, celery, green beans, green peas spinach, tomatoes prunes flavored with lemon juice and vegetables (carrots potatoes tomatoes, peas beans spinach) with pearl barley and beef extract, prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL July 1, 1933, p 35, July 8 1933 p 125, July 22, 1933, p 283, July 29, 1933, p 366, Aug 12 1933 p 525, Aug 19, 1933, p 605, Aug 26 1933 p 675, Sept 2 1933 p 779)

**MEADS POWDERED PROTEIN MILK
NON CURDLING**

RICHER IN PROTEIN AND LACTIC ACID AND LOWER
IN LACTOSE THAN DRIED WHOLE MILK

Manufacturer—Mead Johnson and Company, Evansville Ind

Description—Powdered homogenized modified milk prepared from whole milk cream curd precipitated with calcium chloride and skim milk acidified with U S P lactic acid, relatively richer in protein and lactic acid and lower in lactose than dried whole milk.

Manufacture—High grade milk produced under the Chicago Board of Health Inspection is used. Two thirds of the total volume of the milk to be treated is whole milk, one third is skim milk. The whole milk is boiled and treated with sufficient calcium chloride to cause coagulation of the casein; the whey is excluded in the curd. The curd is allowed to settle and the whey containing the calcium chloride is removed by decantation. The curd is drained and mixed with the skim milk

acidified to 0.75 per cent with U S P lactic acid and homogenized. Steam is injected into the mixture in a closed tank with a vent pipe connected to a condenser and to a vacuum pump. The air is exhausted from the tank, the mixture is rapidly heated to 110 C and after one minute is rapidly cooled by creation of a vacuum in the tank. The heating in the absence of air prevents oxidation of the natural vitamins of the milk. The mixture is again homogenized spray dried and sealed in tins. The process described changes the character of the casein, so that boiling the reconstructed powdered "protein milk" does not cause curdling.

Analysis (submitted by manufacturer) —

	per cent
Moisture	1.5
Ash	6.0
Milk fat	26.5
Protein (N × 6.38)	39.0
Lactose (by difference)	24.0
Titrateable acidity as lactic acid	3.0

Analysis of standard dilution (1 ounce powder to 11 ounces water)

	per cent
Ash	0.5
Milk fat	2.2
Protein (N × 6.38)	3.3
Lactose (by difference)	2.0
Titrateable acidity as lactic acid	0.3
pH	4.8

Calories—5.0 per gram 142 per ounce

Claims of Manufacturer—To be used in accordance with the physician's instructions when a modified milk food richer in protein and lactic acid and lower in lactose than dried whole milk is desired.

**FANT MILLING COMPANY WHOLE
WHEAT FLOUR**

Manufacturer—Fant Milling Company, Sherman, Texas

Description—Whole wheat flour milled from high protein hard winter wheat.

Manufacture—Whole wheat is cleaned, washed, scoured, tempered, and reduced to a flour.

Analysis (submitted by manufacturer) —

	per cent
Moisture	13.0-14.0
Ash	1.5-1.6
Fat (ether extraction method)	18-20
Protein (N × 5.7)	14.5-15.5
Crude fiber	2.0-2.3
Carbohydrates other than crude fiber (by difference)	67.2-64.6

Calories—3.4 per gram 97 per ounce

MCCORMICK'S BEE BRAND LEMON EXTRACT

Manufacturer—McCormick and Company, Inc, Baltimore

Description—Lemon extract containing alcohol, water, and oil of lemon.

Manufacture—Lemon oil from the peel of Italian and Sicilian lemons is expressed by hand clarified by settling, packed in tinned copper cans and exported. At the United States factory the lemon oil is dissolved in 95 per cent alcohol the necessary quantity of water is added, and the solution is clarified by filtration and bottled.

Analysis (submitted by manufacturer) —

	per cent
Alcohol by volume	80
Water by volume	12.7
Oil of lemon by volume	8.0
Citral	0.36 Cm per 100 cc

Claims of Manufacturer—Conforms to the definition and standard for lemon extract of the United States Department of Agriculture.

LOG CABIN SLICED BREAD

Manufacturer—Log Cabin Baking Company, Oroville Calif

Description—A white bread made by the sponge dough method (method described in THE JOURNAL March 5, 1932 p 817) prepared from patent flour, water, sucrose, shortening, powdered skim milk, salt, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 9, 1933

NEW FOODS AND DRUGS LEGISLATION

The proposed repeal of the Food and Drugs Act of 1906 as amended, with the enactment of an entirely new law, now commonly called the Tugwell or Copeland Food, Drug and Cosmetic bill (S 1944, H R 6110), has resulted in an unusual—perhaps much to be expected—outpouring of publicity and propaganda from many sources. Periodicals representing the drug, food and cosmetic industries have burst forth with hysterical editorials, special articles, cartoons and similar manifestations of interest indicating extraordinary fears in relationship to the effects of this legislation, if enacted, on the industries that they represent. At the same time, such organizations as represent movements for pure foods and drugs honestly advertised and some of the great leaders in the food and drug industry have indicated their general approval of the measure in most of its aspects. Not only from Washington, and particularly from officials representing the Food and Drugs Administration, but also from Mrs. Franklin D. Roosevelt have come statements indicating that the proposed act may be said to represent an administration measure. By that very fact the Tugwell or Copeland bill is likely to become to some extent at least the law of the land.

The most significant aspects of the proposed legislation concern the extent to which it controls advertising apart from the label and the package. It is no secret that the development of modern advertising, particularly for certain types of drugs, foods and cosmetics, has been so extravagantly elaborated and altogether so grossly exaggerated, misleading and unwarranted as to smell to high heaven in the nostrils of every honest man. The extragovernmental agencies that have been developed in order to assure readers of certain types of advertising copy that some censorship and control have been applied bear witness to the fact. The growth of the various councils and committees of the American Medical Association in the fields of drugs, foods and physical therapy, the growth of such agencies as Consumers' Research, and the innumerable labels and seals that attempt to indicate to readers honesty of manu-

facture and of advertising are evidence of the necessity for some further control over the industries concerned. Unfortunately, these industries have been so unwise as to fail to develop for themselves efficient codes of ethics and methods of enforcement. It seems reasonable to believe that new legislation would have been unnecessary if the industries concerned, and particularly advertising, had seen sufficiently soon the handwriting on the wall.

At the last meeting of the Board of Trustees of the American Medical Association, held in Chicago in November, the publications of the Association were urged to support the principle of the new foods and drugs legislation. The Board of Trustees supports fully the necessity for control at this time of the advertising of foods, drugs and cosmetics but did not consider the time as yet ripe for official pronouncements on the details of administration involved in the new act. Whereas the new legislation is intended to embody all the valuable features of the act which it repeals and to make such additions as may be necessary for regulation of the manufacture, distribution and sale of foods, drugs and cosmetics, it seems in some parts to fall short of this purpose. In the new legislation the Secretary of Agriculture is vested with authority beyond that originally granted by similar legislation. This aspect of the bill has been widely attacked, however, Mr. Walter G. Campbell, chief of the Food and Drugs Administration, points out that the charge is a fallacy, since the proposed law says "The findings of fact by the Secretary of Agriculture shall be conclusive if in accordance with the law."

In their attempt to attack the proposed legislation, "patent medicine" manufacturers particularly have insisted that it will prevent self medication. They have even insinuated that the Tugwell bill was prepared by the American Medical Association as a means of preventing the public from treating itself with household remedies as it has in the past. The insinuation is absolutely unwarranted. The American Medical Association has recognized the use of household remedies and has even listed in *Hygeia*, its magazine for the public, those which were considered particularly suitable for the family medicine chest. Secondly, as Mr. Campbell points out, the Tugwell bill recognizes the right of self medication but goes further in asserting that the person who does attempt to treat himself has a right to know what he is employing, its uses, and whether or not it possesses any dangers to his health. The manner in which this charge has been used by the "patent medicine" industry in attacking the Tugwell bill previous to any hearings might well be taken as a further indication of the real necessity for such legislation.

The Bureau of Legal Medicine and Legislation of the American Medical Association has been carefully analyzing the provisions of the Tugwell bill from the points of view of its protection of the public, its

adaptability to the practice of medicine, and its successful administration. No doubt the hearings that will be held on this bill before it comes up for final action before Congress will bring to light necessity for various modifications of its phraseology and even of some of its regulations. In the meantime, however, the American Medical Association goes on record as being wholly behind the principles represented by this legislation. The American people have a right to the greatest protection that the law can afford in relationship to their health. The use of foods, drugs and cosmetics is intimately bound with the health of the people. The evidence that the Food and Drugs Act of 1906 failed largely of its purpose because of gross abuses that developed in advertising is so glaring that it is common knowledge to the man in the street. The time has come for extension of this legislation to bring about better control. The leading associations in all the industries concerned recognize this necessity. Those manufacturers who exploit human frailty for personal gain are apparently girding themselves for battle, for they know that such legislation as is proposed means the death of their rackets. It will behoove the medical profession to be aware of the interests concerned and the principles involved, to follow the hearings on this vital subject, and to use all the influence it possesses to aid its passage, when a suitable bill is finally evolved from the proposed measure.

SOME FIGURES ON INDUSTRIAL ACCIDENTS

"Safety first" has become such a well known phrase that familiarity with it has tended to lessen the public sense of the significance of the campaign for accident prevention. One need only peruse the figures setting forth the heavy toll of life and limb that was exacted by many industries twenty-five years ago and compare them with those of the same industries today to be impressed by the remarkable progress that has been made.

The *Monthly Labor Review*, organ of the Bureau of Labor Statistics of the United States Department of Labor, published in its September issue an article on the accident experience in the iron and steel industry to the end of 1932.¹ Taking the industry as a whole, there has been a decline from 82.06 accidents resulting in death or disability per million man-hours worked in 1907 to 18.06 in 1932. In 1907, 69 hours of working time was being lost by injured workmen for every thousand man-hours worked. In 1932 the loss of time was 2.19 hours. This is a reduction of 68.3 per cent. The fatal accident rate diminished from 0.76 per cent in 1907 to 0.14 in 1932; permanent disability from 1.27 to 1.03; and temporary disability from 80.03 to 16.89.

These decreases have not been uniform in all branches and phases of the industry or in all states in which the

manufacture of iron and steel is an important enterprise. The best records are those of blast furnaces, Bessemer converters, plate mills, open hearth furnaces and rolling mills. The poorest are those of foundries, puddling mills, axle works and car wheels. In fact, the frequency rate in puddling mills increased from 47.07 in 1917 to 68.94 in 1932. Taking the four leading iron and steel manufacturing states, Pennsylvania, Ohio, Indiana and Illinois, Indiana has considerably the best record. In Indiana the rate was lowest in 1907, and the percentage of improvement was greater in 1932 than that of any of the other three states. Types of industrial processes and the emphasis placed on accident prevention are the most probable causes of these regional differences.

In the petroleum industry the last six years has witnessed a reduction in the accident frequency rate of 60 per cent and in the severity rate of 28 per cent. With an estimated cost to this industry of \$300 for each disabling accident, this reduction represents a saving of more than three million dollars in 1932. In the cement manufacturing industry the frequency rate fell from 10.61 in 1928 to 4.65 in 1932, and the severity rate from 3.72 to 1.80. Fifty-seven of 112 cement manufacturing establishments reported that they had had no disabling accidents in 1932, and thirty others had but one accident each.

The development of industrial safety codes which, since 1913, has been a function of the United States Bureau of Standards, has been transferred as a government economy measure to the American Standards Association. This association, organized in 1918 by five major engineering societies, is a federation of thirty-seven trade associations, technical societies and governmental departments.

LATHYRISM

Leguminous seeds, including edible beans, peas and the peanut, are such common ingredients of the diet in most parts of the world where these foods are freely available that few persons suspect the shortcomings of some of the species. In contrast with the cereal grains, the most common sources of human energy, with a protein content rarely exceeding 12 per cent, the legumes may be made up of as much as 23 per cent of albuminous constituents. As McLester¹ has pointed out, while the proteins of the legumes are of higher quality than those of the cereal grains, there is as a rule something lacking in their structure which limits their availability. Many of them are lacking in cystine. They have the power, however to supplement in a satisfactory manner the cereal proteins, this is particularly true of wheat and the pea and of wheat and the soy bean. The legumes are rich also in carbohydrate and contain a small amount of fat. The large amount of hemicellu-

¹ *Monthly Labor Review*, Vol. 55, No. 9, (Sept.) 1932.

¹ McLester, I. S. Nutrition and Diet in Health and Disease. Philadelphia: W. B. Saunders Company, 1931.

Current Comment

INTRANASAL VERSUS INTRAPERITONEAL VIRULENCE

The intraperitoneal virulence of the pneumococcus injected into mice is currently regarded as a reliable measure of its natural infectivity for this animal species. Such tests, however, may give a wholly misleading picture of its natural epidemiology. Webster and Clow¹ of the Rockefeller Institute report that, with the fifty pneumococcus strains thus far tested by them, intranasal virulence is in most cases wholly independent of the virulence as determined by the routine intraperitoneal method. High peritoneal pathogenicity, for example, is often accompanied by an almost total lack of nasal infectivity. There is a parallelism between nasal virulence and the tendency of the micro-organisms to set up carrier conditions and to spread by contact, but usually a complete lack of parallelism with virulence as determined by the routine intraperitoneal method. The New York investigators insist further that pneumococcus "stability" is widely different on the nasal surfaces and in internal tissues. Repeated intraperitoneal passage, for example, almost invariably enhances intraperitoneal virulence but has little or no effect on nasal pathogenicity. Repeated intranasal passage, in contrast, almost invariably causes a decrease and eventually complete loss of mucous membrane infectivity, which loss is not accompanied by a demonstrable reduction in peritoneal infectivity. If similar regional differences are found with *Bacillus tuberculosis* or with other microbe species, present-day epidemiologic concepts may require considerable modification.

SOME IMMEDIATE EFFECTS OF HEMORRHAGE

The ultimate effects of hemorrhage are familiar to physicians. Most conspicuous, perhaps, are the varying degrees of anemia, which may call for therapeutic or dietary prescriptions as well as time to complete the hematopoietic repair processes. Loss of corpuscles and their constituent hemoglobin cannot be recouped immediately. Adjustments of plasma volume occur much more promptly, so that persistent changes in vascular pressure may be averted in due season. Some of the physiologic responses to hemorrhage are, however, rapid. They may intervene in a period of a few minutes rather than hours or days. There is always some degree of fluid redistribution in the body. The details of this process have been studied by Adolph and his co-workers² at the University of Rochester. Immediately following, and even during, hemorrhage, distribution of the blood plasma is always observed. It is due to a rapid migration or transfer of fluid from extravascular spaces into the circulation. In the Rochester experiment the restorative possibilities of the spleen by means of its hidden resources of blood cells was excluded by preliminary removal of that organ. Some evidence of the source of part of the restorative fluid

lose in the bean often leads to intestinal fermentation and flatulence. The vitamin content of the legumes varies somewhat, they are as a rule lacking in vitamin A, all contain an abundance of vitamin B. They offer a good supply of iron and phosphorus but are usually deficient in calcium, sodium and chlorine.

There are, however, species of legumes that seem to be poisonous. The effect is designated as lathyrism, or vetch poisoning. Various writers allege that this has been known since the time of Hippocrates, that it has been common in the past in India and northern Africa, and that small local outbreaks have occurred frequently in Italy, France and elsewhere in southern Europe.² For a long time it has been known that the disease is caused by the eating of lathyrus peas of three species, *Lathyrus sativus*, *Lathyrus cicera* and *Lathyrus clymenum*. After a poor crop of wheat, barley and other cereals, the poorer people in India and some parts of northern Africa are forced to eat the lathyrus peas as a large part of their diet, and lathyrism then becomes prevalent. The use of the peas as one third to one half of the diet for two or three months is considered enough to cause the disease.³ However, not all persons eating such a diet are affected, and in families only certain members are attacked. When the peas are eaten as a smaller proportion of the diet, they are said to be harmless.² The symptoms in man are sudden and severe pain in the lumbar region, girdle sensation, motor paralysis of the extremities, tremor and fever.⁴

Opinions have differed with regard to the nature of the toxic agent in lathyrus seeds. The symptoms suggest the possibility of some degeneration of the spinal cord, and it has been proposed that this might be averted by appropriate dosage with vitamin A. An attempt has therefore been made at the University of Wisconsin⁵ to ascertain whether the abnormal condition produced by the peas was ameliorated or prevented by the feeding of cod liver oil or yeast as vitamin supplements. The species of lathyrus peas used was *Lathyrus odoratus*, the sweet pea used for ornamental purposes in this country. Lathyrism could readily be produced in experimental animals by feeding diets containing liberal amounts of the "sweet pea." Young animals received no protection against the toxicity of the sweet peas from cod liver oil or cod liver oil concentrate or from dried yeast, but the adult animals were protected to some extent by the inclusion of 2 per cent of cod liver oil in the ration. Cooking the sweet peas for two and one-half hours did not destroy their toxicity. The toxic factor was extractable from the peas by water at the boiling point. The protection against lathyrism lies in the avoidance of the dietary use of legumes of known toxicity.

² Stockman R. Lathyrism. *J. Pharmacol. & Exper. Therap.* 37: 43 (Sept.) 1929.

³ Young T. C. M. A. Field Study of Lathyrism. *Indian J. Med. Research* 15: 453 (Oct.) 1927.

⁴ Cecil, R. L. *Textbook of Medicine*, ed. 2. Philadelphia: W. B. Saunders Company, 1930.

⁵ Ceiger Beatrice J., Steenbock Harry and Parsons Helen T. Lathyrism in the Rat. *J. Nutrition* 6: 427 (Sept.) 1933.

¹ Webster L. T. and Clow A. D. *J. Exper. Med.* 58: 465 (Oct.) 1933.

² Adolph E. F., Gerbasi M. J. and Lepore M. J. The Rate of Entrance of Fluid into the Blood in Hemorrhage. *Am. J. Physiol.* 104: 502 (May) 1933.

was discovered by excluding certain viscera from the circulation. In their absence the rate of blood dilution was greatly diminished. There are observations to support the belief that even in man the immediate rate of entrance of fluid into the blood stream after hemorrhage may amount, for a time, to 0.25 cc per kilogram of body weight in a minute. Adolph has summarized the further immediate effects of hemorrhage as follows: the primary effects of loss of blood from circulation are to decrease the arterial, venous and capillary pressures and to decrease the rate of blood flow and oxygen flow to most tissues. To this situation the circulation responds by increase in heart rate, discharge of epinephrine, discharge of blood from the spleen, local vasoconstrictions, and local persisting ischemias. The respiration responds to the local asphyxia in its centers and to the pouring of lactate into the circulation by hyperventilation, followed eventually by asphyxia and cessation of breathing. In the capillaries, fluid flows into the blood from tissue spaces, water excretion by the kidneys is diminished, and various dissolved constituents interchange in response to the lowered pressures, to the anoxia, and to the altered types of tissue metabolism. This recital is indeed a thrilling picture of some of the factors that are brought into action when the integrity of the body functions is threatened.

Association News

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES HELD AT ASSOCIATION HEADQUARTERS NOV 16 AND 17, 1933

A meeting of the Board of Trustees was held in Chicago on Thursday and Friday, November 16 and 17, 1933.

PROJECT OF ESTABLISHING MEMORIAL ROOM IN PERSHING HALL ABANDONED

Since, owing to the present economic conditions, it seems impossible to complete by popular subscription the fund of \$10,000 for the establishment in Pershing Hall of a memorial room in honor of the members of the medical corps of the expeditionary forces who served and gave their lives in the World War, it was decided to abandon the project and to return the money that has been collected.

HISTORY OF THE AMERICAN MEDICAL ASSOCIATION

A tentative outline for the preparation of a history of the American Medical Association as a symposium volume, was approved, and the editor was authorized to assign the chapters and to compile the material for the volume as rapidly as possible.

ASSOCIATION TO EXHIBIT AT FAIR NEXT YEAR

It was decided to continue the exhibit of the Association in the Hall of Science at the Fair in 1934 with the understanding that the standard of the medical exhibits be maintained as high for the next year as it was this year.

REPRESENTATIVES ON ADVISORY BOARD OF PUBLIC HEALTH AND CHILD WELFARE OF THE GEN- ERAL FEDERATION OF WOMEN'S CLUBS

Drs. N. B. Van Etten and A. C. Christie have been appointed to represent the American Medical Association on the Advisory Board on Public Health and Child Welfare of the General Federation of Women's Clubs.

PREVENTION OF PRENATAL SYPHILIS

With a view to carrying out the resolution adopted by the House of Delegates relative to the prevention of prenatal

syphilis a conference of representatives of the health agencies mentioned in the resolution was arranged, to be held during this meeting of the Board. After the conference, a committee was appointed to develop plans for disseminating information on this subject to the profession and to medical schools, using the facilities of the Association for this purpose.

CODIFYING OF DECISIONS OF JUDICIAL COUNCIL AND OF OTHER OFFICIAL BODIES OF ASSOCIATION

The Board authorized the codification of the decisions of the Judicial Council and of other official bodies of the Association.

DISMISSAL OF SUITS AGAINST ASSOCIATION

The Association's attorneys advised the Board of Trustees that suits instituted against the Association by P. L. Clark and the Ora Noid Company have been dismissed, on motions of the plaintiffs.

APPOINTMENT OF CHAIRMAN OF LOCAL COMMITTEE ON ARRANGEMENTS FOR CLEVELAND SESSION

By unanimous vote, the selection of Dr. C. W. Stone to act as chairman of the Local Committee on Arrangements for the Cleveland Session was confirmed.

PUBLICATION OF STUDY OF INSURANCE PLANS IN EUROPEAN COUNTRIES

Authorization was given for the publication in book form of a report from the Bureau of Medical Economics, based on a study of insurance plans in European countries.

MISCELLANEOUS

Other matters were given consideration, most of which will be taken up again at later meetings and reported on at some future date.

MEDICAL BROADCAST FOR THE WEEK

Talk over Network of the National Broadcasting Company

The American Medical Association broadcasts each Monday afternoon from 1:30 to 1:45, Eastern standard time (12:30, central standard time). The subject for Monday, December 11, is "Holiday Follies." The speaker will be Dr. W. W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association. Subjects and speakers for subsequent broadcasts will be announced weekly in *THE JOURNAL*.

The following stations thus far have signified their intention of accepting the program: WEAJ, New York; WEEI, Boston; WTAG, Worcester, Mass.; WBEN, Buffalo; WFBR, Baltimore; WTAM, Cleveland; WWJ, Detroit; WSAI, Cincinnati; WDAF, Kansas City; and WMAQ, Chicago. Additional acceptances will be announced in *THE JOURNAL*, when received.

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

December 12. Bunny's Revenge
December 14. Influenza.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

December 16. Do You Take Your Hearing for Granted?

THE CLEVELAND SESSION

Special Exhibit on Epidemic Encephalitis

The Committee on Scientific Exhibit has arranged for a special exhibit on epidemic encephalitis for the Cleveland Session, June 11-15, 1934. The exhibit will be in charge of the following committee:

Dr. R. C. Williams, United States Public Health Service, Washington, chairman.
Dr. James P. Leake, Washington.
Dr. R. S. Mearns, St. Louis.

A competent corps of demonstrators will assist the committee and pamphlets on epidemic encephalitis will be distributed.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Certain Eyelash Dyes Prohibited—All eyelash dyes containing aniline or coal tar products are prohibited from being offered for sale on the San Francisco market, by an order of the San Francisco Department of Public Health, effective November 15. Recent events, traceable to one product, have directed attention to the potential danger offered by the use of any of these preparations.

Annual Registration Due January 1—All practitioners of medicine and surgery holding licenses to practice in California are required by law to be registered annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$1. Failure to pay the required fee within sixty days after January 1 works an ipso facto revocation of a license. Thereafter a license may be reissued only after application and the payment of a \$10 penalty.

Pediatric Meeting—The second annual meeting of the American Academy of Pediatrics (region IV) took place in Los Angeles, November 10-11. The guests of honor were Drs. Jay I. Durand, Seattle, and Clifford G. Grullee, Chicago. Physicians presented the following program:

Clarence M. Hyland: Tumors of the Kidney Region in Infancy and Childhood.
Madeleine A. Fallon: Iron Deficiency Anemias.
William M. Hays: Leukemia with Leukopenia.
Henry Dietrich: Tuberculosis in Childhood.
Howard R. Cooder: Cerebrospinal Syphilis in Childhood.
Howard F. West: Problems in Juvenile Diabetes.
Ezra S. Fish: Calcinoses.
Hugh B. Berkley: Congenital Idiopathic Edema (Milroy's Disease).
Victor E. Stork: Application of Psychiatric Social Work to Pediatric Practice.
Egbert Earl Moody: Postinfectious Encephalitis.
Philip E. Rothman: Observations on Therapy in Erysipelas.
Norman K. Nixon: Bacillary Dysentery in Children.
Mary F. Bigler: Serum Treatment in Sporadic Meningitis.
Oscar Reiss and Forrest N. Anderson: among others: Place of the Child Guidance Clinic in Pediatrics.

COLORADO

Hospital Meeting—The ninth annual meeting of the Colorado Hospital Association was held in the Cosmopolitan Hotel, Denver, November 15-16. Among others, the following speakers participated:

Dr. Isadore D. Bronfin: Denver, Protection of Employees in Tuberculosis Hospitals and Sanatoria.
Dr. Maurice H. Rees: Denver, Hospital Public Relations.
Mr. Walter G. Christie: Denver, Hospital Wage Standards and Vacation and Sick Leave Allowance.
Dr. Thomas Donald Cunningham: Denver, What Hospital Diets Should Contain.
Mr. Robert B. Witham: Denver, Hospital Social Service.
Mr. William S. McNary: Denver, Does Colorado Need Local Hospital Councils?

CONNECTICUT

Annual Registration Due During January—All practitioners of medicine and surgery holding licenses to practice in Connecticut are required by law to be registered during January, with the state department of health, and at that time to pay a fee of \$2. Licentiatees who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is subject to a fine of not more than \$5.

Yale's Governing Board Reorganized—Announcement of the reorganization of the governing board of Yale University School of Medicine during the past year was made, November 20. The new arrangement places the responsibility more definitely and represents more adequately the many interests of the institution, it is believed. Two major sections of the board of permanent officers have been formed: the committee on the school of medicine and the committee on biologic sciences. The first deals primarily with problems of medical education and is subdivided into the committee on clinical subjects and the committee on preclinical subjects, while a prudential committee representing both of these subdivisions has been created to facilitate conduct of the regular business of the school. The committee on the biologic sciences deals with problems of

graduate education as distinct from medical education. As a standing committee of the school of medicine and the graduate school, it effects close cooperation between the two schools concerned with graduate work in the biologic sciences.

DELAWARE

Society News—Dr. Collier F. Martin, Philadelphia, spoke on "Proctology and the General Practitioner" before the New Castle County Medical Society, November 21.—Dr. Leonard D. Frescoln, Philadelphia, addressed the Delaware State Education Association in Newark, November 10, on "Coupling Up Kinesiology with Prescribed Physical Exercises"—The Delaware Academy of Medicine, Wilmington, was addressed, November 2, by Drs. Frederic Maurice McPhedran and Esmond R. Long, Philadelphia, on "Pulmonary Tuberculosis in Children" and "The Nature and Significance of the Tuberculin Reaction," respectively.

FLORIDA

Annual Registration Due January 1—All practitioners of medicine and surgery holding licenses to practice in Florida are required by law to be registered annually on or before January 1 with the secretary of the state board of health, and at that time to pay a fee of \$1. A licentiate failing to register annually is subject to a fine of not more than \$50.

ILLINOIS

State Laboratory at University—A branch diagnostic laboratory has been established at the University of Illinois, Urbana, by the state department of public health, in response to a demand from physicians in the central eastern part of the state. The new branch, under the supervision of Fred W. Tanner, Ph.D., is prepared to do all diagnostic tests ordinarily performed in public health laboratories, including examinations for typhoid, undulant fever, tularemia, syphilis, malaria, tuberculosis, gonorrhea, Vincent's angina, diphtheria and rabies. Other diagnostic laboratories of the state department are located in the Capitol Building, Springfield, Southern Illinois State Normal University, Carbondale, and 1849 West Polk Street, Chicago. Specimens for the new branch should be addressed to the state diagnostic laboratory, room 360, Chemistry Building, Urbana.

Chicago

Society News—Dr. Isaac A. Abt delivered the presidential address before the Institute of Medicine of Chicago, December 5, on "Treatment of Whooping Cough: A Study in the History of Therapeutics"—At a meeting of the Chicago Society of Internal Medicine, November 27, Dr. Joseph L. Miller, among others, spoke on "Chronic Rheumatic Diseases of the Spine."—Dr. Agnes Beulah Cushman discussed "Pituitary Headaches" before the Chicago Council of Medical Women, December 1.—Speakers before the Chicago Surgical Society, December 1, included Drs. Alfred W. Adson and Winchell McK. Craig, Rochester, Minn., on "Diagnosis and Surgical Treatment of Spinal Cord Tumors" and "Surgery of the Sympathetic Nervous System," respectively.—The Chicago Laryngological and Otological Society was addressed, December 4, by Drs. Henry C. Sweeney on "Pathogenesis and Diagnosis of Bronchogenic Carcinoma" and Francis L. Lederer on "Pathogenesis and End Results of Sinus Thrombosis"—The Chicago Medical Society heard Dr. Lloyd D. Felton, Boston, speak on "Limitations of Serum Treatment," December 6, in a symposium on pneumonia. Drs. Frederick Tice and Charles Schott discussed the medical and pediatric aspects, respectively. At a dinner meeting, Dr. Felton reviewed the "History and Development of Serum Treatment of Pneumonia." A symposium on genito-urinary diseases from the viewpoint of the general practitioner will be presented before the society, December 13, by the faculty members of the University of Illinois College of Medicine.—Speakers before the Chicago Pathological Society, December 11, will include Drs. Theodore E. Walsh and William E. Adams on "Observations on the Cytology of Nasal Polyps" and "Vascular Changes in Chronic Experimental Atelectasis of the Lungs," respectively.

INDIANA

Aviators' Beacon on Hospital—An aviation beacon atop the Methodist Episcopal Hospital Indianapolis, was dedicated November 9. The light stands 250 feet above the ground and 80 feet above the roof of the building. Erection of the hospital beacon, believed to be the first in the United States, is said to have been suggested by one on St. Bartholomew's Hospital London, which has been burning since 1847, first an oil light.

and now an electric signal Mrs Mary Hanson Carey, Indianapolis, donated the funds for the beacon The dedication program included as speakers Dr William N Wishard on "The Ideal of the Medical Profession in the Modern Hospital", Alden B Mills, Chicago, managing editor of *Modern Hospital*, N E Davis, secretary, board of hospitals and homes, Methodist Episcopal Church, Columbus, Ohio, and Robert Hahn, Evansville, president, Indiana Hospital Association The beacon will serve as a guide for aviators

IOWA

Outbreak of Typhoid—One death and twelve cases of typhoid were recently reported in Corydon, the most serious outbreak in Iowa this year, according to the state medical journal An investigation excluded the city water supply as the source of infection but revealed that nine of the patients used milk from the same dairy and two others lived on a farm adjacent to it The dairyman distributed raw milk, although caps on the bottles were labeled "grade A pasteurized" His wife gave a history of typhoid in childhood and an outbreak of the disease in 1918 was traced to the same dairy Although the woman is regarded as a typhoid carrier, several laboratory examinations at the time of the report failed to demonstrate a carrier state

Society News—Dr Frank H Lahey, Boston, will speak before the Linn County Medical Society, Cedar Rapids, December 21 on "Treatment of Thyroid Disease and Associated Conditions"—At a meeting of the Southeastern Iowa Medical Society, Dr John I Marker, Davenport, was elected president the principal speaker was Dr Edwin F Schneiders, Madison, Wis, on "Gynecologic and Obstetric Emergencies" Burlington was designated as the place for the next annual meeting in October, 1934—The program of an all day meeting of the Iowa Academy of Ophthalmology and Otolaryngology in Des Moines, December 5, was devoted to presentation of case histories with demonstrations—Dr Zella White Stewart, Iowa City, discussed allergy before the Des Moines District Dental Society, December 4 The Des Moines Academy of Medicine and Polk County Medical Society was invited to attend

LOUISIANA

Annual Renewal Due January 1—All practitioners of medicine and surgery holding certificates to practice medicine in Louisiana are required by law to renew those certificates annually on or before January 1, with the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of \$2 The board may by unanimous vote revoke any certificate not renewed

MAINE

Society News—Dr Douglas Quick, New York, addressed the Cumberland County Medical Society in Portland October 27, on "A General Survey of Cancer Therapy"—The Knox and Waldo county medical societies were the guests of the Kennebec County Medical Association in Waterville, October 19 speakers included Drs Ara B Libby, Gardiner, on undulant fever and Charles B Popplestone, Rockland, neurophilis—Dr Reginald Fitz, Boston, discussed "Auto-Endocrinology" before the Penobscot County Medical Association in Bangor, October 17—Speakers before the Somerset County Medical Association in Bingham, October 26 were Drs Eugene L Hutchins, North New Portland, and Edward E Bover, Waterville, on pneumonia and fractures, respectively—At a meeting of the York Medical Society in Sanford October 18 Dr Edward A Greco Portland, discussed "Significance of Childhood Tuberculosis"

MICHIGAN

Annual Highland Park Clinic—The Highland Park Physicians' Club conducted its eighth annual clinic, December 6 with the presentation of the following program

- Dr Harry R Forster, Milwaukee Common Fungus Infections of the Skin Their Diagnosis and Treatment
- Dr Thomas C Galloway, Evanston Ill Surgical Disturbance in Malpractice
- Dr Carl A Hedblom, Chicago Thoracic Tumors
- Dr Eric Fred Lewis, St. Louis Renal Colic Without Pain
- Dr Walter Pitt, Chicago Pathogenesis of Rheumatic Conditions A Medical Correlation of Focal Infection
- Dr Edward Siedel, Louisville Direct Deliveries
- Dr Alexander Germond, Springfield, Mass Spinal Tumors
- Dr Robert Greenberg, Chicago Sex, Genes and Diseases
- Dr Joseph M. Witherspoon, General Practitioner

Erection of a Cancer Hospital Opposed—At a meeting November 1 the council of the Wayne County Medical Society voted to oppose on record any and all proposed erection

tion of a cancer hospital at Eloise The council believes that the new cancer hospital is not necessary, because less than 50 per cent of the hospital beds in the Detroit area are occupied and because all the private hospitals of Detroit have well equipped cancer services, and a sufficiently large number, the latest high voltage apparatus The society maintains that since the cancer services in Detroit hospitals are doing 75 per cent of their work on cancer patients free, it cannot justly be claimed that a special cancer hospital is necessary to take care of indigents, and, further, that statistics show that no better results are obtained in the special cancer hospital than in the private general hospital These objections with others formed the basis of the council's stand against the proposed construction

MINNESOTA

Annual Registration Due During January—All practitioners of medicine and surgery holding licenses to practice in Minnesota are required by law to be registered annually during January, with the secretary of the board of medical examiners, and at that time to pay a fee of \$2 A licensee who practices without renewing his license is guilty of a misdemeanor and is subject to prosecution

Layman's Health Audit Service Declared Unlawful—In a decision, November 3, the supreme court of Minnesota declared that the "health audit service," conducted by John Granger, a layman, furnishing urinalyses and blood pressure tests through the medium of a licensed physician doing the actual work was unlawful Granger sought an injunction in August, 1932, to restrain the state board of medical examiners from interfering with the conduct of this business Although a licensed physician did the actual work, Granger sometimes advised or passed on to the "subscriber" advice from the pathologist as to whether the results showed a normal or abnormal state of health and whether the "subscriber" should see a physician, in some cases advising as to diet, exercise and habits The court held that the plaintiff was engaged in the diagnosis or analysis of the condition of human health, which constituted a violation of the basic science law, and that advising the "subscriber" for a fee as to habits of diet, exercise or living, although not accompanied by any medical prescription or treatment, was a violation of the medical practice act

MISSOURI

New Officers for Clinical Society—Dr Rexford L Dively has been elected president of the Kansas City Southwest Clinical Society, Dr Thomas G Orr, vice president, Dr Herbert S Valentine, treasurer, and Dr Hugh Wilkinson, secretary Dr Ira H Lockwood was named director of clinics, and Dr Edward H Skinner, editor of the society's *Monthly Bulletin*

Dr Goldstein Receives St Louis Award—Dr Max A Goldstein, founder and director, Central Institute for the Deaf, St. Louis, was presented with the second annual St Louis Award, November 4, "in recognition of his achievements and research in dealing with the problems of the deaf" The award, \$1000 in cash and a certificate, is made each year to "the resident of metropolitan St Louis who contributed the most outstanding service to the development or performed such service as to bring honor to the community" The source of the award is a \$10000 fund, established anonymously by a St. Louisan Organizations of which Dr Goldstein has been president include the American Otological Society, 1927 American Laryngological, Rhinological and Otolological Society, 1930, and the American Academy of Ophthalmology and Otolaryngology, 1902 He was recently awarded the gold medal of the American Laryngological, Rhinological and Otolological Society for his work in the study and rehabilitation of the deaf child

NEW YORK

Annual Registration Due January 1—All practitioners of medicine and surgery in New York are required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration on blank application forms to be furnished by him and to pay at such time a fee of \$2 The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives to receive and transmit to him such application forms and fees Practitioners are subject to severe penalties for failing to register and for continuing in practice thereafter

Health at Utica—Telegraphic reports to the U S Department of Commerce from eighty five cities with a total population of 37 million for the week ended November 25 indicate

that the highest mortality rate (187) appeared for Utica and the rate for the group of cities as a whole was 115. The mortality rate for Utica for the corresponding week of 1932 was 112 and for the group of cities, 11. The annual rate for the eighty-five cities was 108 for the forty-seven weeks of 1933, as against a rate of 11 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

New York City

Third Harvey Lecture—Dr. Ross G. Harrison, Sterling professor of biology, Yale University School of Medicine, New Haven, will deliver the third Harvey Lecture of the season at the New York Academy of Medicine December 14. His subject will be "Heteroplastic Grafting in Embryology."

New Psychiatric Unit at Bellevue—Formal dedication ceremonies for the new Bellevue Psychiatric Hospital, First Avenue and Thirtieth Street, were held, November 2, at a meeting of the New York Society for Clinical Psychiatry in the auditorium of the institution. The hospital was opened last May with equipment for 375 patients, but its ultimate capacity will be 600. When completed, the eight-story building will give wide scope for modern methods of investigating mental disorders. Dr. Abraham A. Brill, president of the psychiatric society, presided at the meeting, at which speakers included James H. Fry, acting commissioner of hospitals, and Drs. George H. Kirby and Smith Ely Jelliffe.

Gifts to New York University—Chancellor Harry Woodburn Chase of New York University has recently announced the following gifts, among others, to the university since May for medical purposes:

Many donors through Mrs. Anne Tiffany for the Cardiac Clinic Endowment Fund \$22,750

Carnegie Foundation for the Advancement of Teaching for retiring allowances \$10,101

Anonymous donor for the Neurological Research Laboratory \$10,000

Carnegie Corporation of New York for the medical college \$8,750

Mead Johnson and Company for vitamin research \$2,000

Various donors for research in pneumonia \$1,400

Lederle Laboratories Inc. for experimental work on liver extract \$1,250

Lucius N. Littauer, \$1,000 for studies in prevention and cure of pneumonia

New York Foundation for research on infantile paralysis \$1,000

Hospital Deficits—Fifty of the fifty-six hospitals in the United Hospital Fund have reported an aggregate deficit of \$4,553,995 after applying their income from endowment on the year's expenses. These hospitals report operating expenses aggregating \$26,359,674 for the year, with operating income of only \$17,916,699. Income from endowment, which is less than usual, amounts to \$3,745,983, leaving a large deficit to be made up by public subscription, for which the fund is now making its annual appeal. Individual hospitals reported that returns from investments and private contributions have been greatly diminished, while persons who formerly would have been private or semiprivate patients are now using the wards or staying at home. Increase in free work and increased credit granted to patients have seriously embarrassed most of them. One hospital reported that its bills had not been paid for three months and employees had had to wait for their wages in November.

Society News—Drs. George A. Wyeth and Anthony Bassler addressed the New York Endocrinological Society, November 22, on "Embryology and Development of the Endocrine Glands" and "Internal Secretions of the Pancreas," respectively. A symposium on aniline tumors of the bladder was presented before the New York Society of the American Urological Association, November 23, by Drs. Russell S. Ferguson, George H. Gehrmann, Lang W. Anderson, Douglas M. Gay and Victor D. Washburn, Wilmington, Del. Discussions of syphilis made up the program of the Medical Society of the County of New York, November 27, speakers were Jacob A. Goldberg, Ph.D., and Drs. George Miller MacKee, Abernathy Benson Cannon and Leon H. Cornwall. The Association of Italian Physicians in collaboration with the Italian Historical Society held a commemorative meeting in honor of Bernardino Ramazzini at the New York Academy of Medicine, November 20, Dr. James J. Walsh spoke on "The Practical Genius of the Italians," Dr. James V. Ricci, "Origins of Italian Medicine," and Angelo M. Sala, "Bernardino Ramazzini, His Life and Works." Dr. Jacob Earl Thomas, Philadelphia, addressed the Society for the Advancement of Gastro-Enterology, November 22, on "Pyloric Reflexes with Reference to the Regulation of Gastric Emptying."

NORTH CAROLINA

Society Presents Gold Headed Cane—The Davidson County Medical Society entertained Dr. Willis J. Vestal, Lexington, at a dinner, October 31, celebrating his fiftieth anniversary in the practice of medicine. Dr. Jarvis R. Terry, Lexington, was toastmaster. Speakers who paid tribute to the physician were Drs. Reno K. Farrington, Thomasville, Charles R. Sharpe, Lexington, Isaac H. Manning, Chapel Hill, John T. J. Battle, Greensboro, and John T. Burrus, High Point. Dr. Burrus presented him with a gold headed cane, the gift of the society.

NORTH DAKOTA

Annual Registration Due January 1—All practitioners of medicine and surgery holding licenses to practice in North Dakota are required by law to be registered annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$5, if a resident of North Dakota, or \$2, if a nonresident. A practitioner may not practice if he has not registered. If he nevertheless continues in his practice his license may be revoked and can be reinstated thereafter on the payment of the delinquent fees and \$0.50 for each month of default.

OHIO

Hospital News—Dr. Norman F. Miller, professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor, delivered the first of a series of clinical lectures to be given at Detwiler Memorial Hospital, Wauseon, November 23, on "Bleeding in the Last Trimester of Pregnancy." The lectures are sponsored by the Commonwealth Fund of New York.

Centennial of College of Medicine—The one hundredth anniversary of the founding of what is now the Ohio State University College of Medicine, Columbus, will be celebrated, March 3, 1934. Plans are under way for a reunion of graduates of the various schools which have been merged through the century to form the present medical school. A "One Hundred Year Book" will be published under the auspices of the faculty and the alumni committee, containing the history of the school and a record of the graduates. Subscriptions at \$10 are now being received by the sponsors. The college of medicine is the successor of five earlier schools, according to official records. The first was Willoughby Medical College, founded at Willoughby, March 3, 1834. Later it moved to Columbus and continued until 1848, when it became Starling Medical College. In 1892 Starling absorbed the Columbus Medical College founded in 1875, and in 1907 Starling merged with Ohio Medical University to form Starling-Ohio Medical College. The school was operated under that name until 1914, when the College of Medicine, Ohio State University, was founded and absorbed the property and the staff of the Starling-Ohio Medical College. Dr. John H. J. Upham is dean of the college of medicine.

PENNSYLVANIA

Hospital News—Montefiore Hospital, Pittsburgh, held its annual scientific day, November 25, with Dr. Leopold Lichtwitz, New York, as the guest of honor. Dr. Lichtwitz conducted a clinic on diseases of the kidneys, endocrine disease and diseases of metabolism and, following a dinner in the evening, delivered an address on "Angiospastic Diathesis."

Annual Registration Due January 1—All practitioners of medicine and surgery holding licenses to practice in Pennsylvania are required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction and to pay a fee of \$1, or such fee as may be fixed by the department of public instruction. A practitioner who fails to register and who continues to practice is subject to a fine of from \$10 to \$100.

Dinner to Dr. Jackson—The Lackawanna County Medical Society gave a testimonial dinner, November 14, to Dr. Byron H. Jackson, Scranton, president of the Radiological Society of North America during the past year. Dr. Eugene L. Pendergrass, Philadelphia, was the principal speaker and Dr. William J. Corcoran, Old Forge, was toastmaster. Among the guests were Drs. George E. Pfahler, Henry K. Pancoast, William Edward Chamberlain, Nathaniel W. Winkelman and John T. Farrell Jr., Philadelphia, Francis Carter Wood, New York, John M. Keichline, Huntingdon, James John Quiney, Easton, and Sydney J. Hawley, Danville. A bound volume of precriptions expressing good wishes of his colleagues was presented to Dr. Jackson.

Philadelphia

Hospital News—Northwestern General Hospital has been taken over by Temple University Hospital and will operate as a separate unit in the university building

Mütter Lecture—Dr Arthur B. Duell, New York, delivered the annual Mütter Lecture of the College of Physicians of Philadelphia, December 6, on "The Pathology and Surgical Treatment of Facial Paralysis." At this meeting of the college, a portrait of the late Dr. Hobart A. Hare was presented by Dr. George E. de Schweinitz, on behalf of the artist and donor Mrs. James H. Hutchinson.

County Society Seminars—The second course of postgraduate seminars under the auspices of the Philadelphia County Medical Society concerns diabetes. Dr. Edward S. Dillon delivered the first lecture, December 8, on medical and pathological aspects. Other speakers announced are:

Dr. Eldridge L. Eliason, Surgical Aspect of Diabetes
Dr. Ralph M. Tyson, Diabetes in Children
Dr. Leonard C. Rowntree, A Consideration of the Ductless Glands
Dr. Michael G. Wohl, Obesity
Dr. W. Wayne Babcock, Thyroid Gland, Surgical Aspect
Dr. John T. Farrell, Jr., Thyroid Gland, Influence of X Rays

At the final meeting of the series, Dr. Moses Behrend will lead a round table discussion.

RHODE ISLAND

Society News—Dr. Hiram Houston Merritt, Jr., Boston, delivered an address at the State Hospital for Mental Diseases, Howard, October 30, on "Diffused Sclerosis."—At the meeting of the Providence Medical Association, November 6, Dr. Henry F. McCusker spoke on "Injuries to the Coccyx," and Drs. Reuben C. Bates, Stanley S. Freedman and William P. Buffum presented reports from the allergy clinic of the Rhode Island Hospital. Dr. William N. Hughes addressed the association, December 6, on treatment of neurosyphilis, and Dr. Paul Appleton presented a motion picture demonstration of congenital deformities.

TEXAS

Annual Registration Due January 1—All practitioners of medicine and surgery holding licenses to practice in Texas are required by law to be registered annually on or before January 1, with the state board of medical examiners, and at that time to pay a fee of \$2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

Instruction in Malaria Microscopy—Baylor University School of Medicine, Dallas, will present its second malaria microscopy school, December 20-21, under the supervision of Drs. Walter H. Moursund, dean, Hardy A. Kemp, associate professor of bacteriology, John W. Brown, state health officer, Charles D. Reece, state epidemiologist, and Charles P. Coogle, malariologist of the U. S. Public Health Service, and others.

Annual Public Health Meeting—Dr. Thomas J. McCann, health officer of the city and county of El Paso, was elected president of the Texas Public Health Association at the annual meeting in Mineral Wells, November 10. Among the speakers were Dr. Horton R. Casparis, Nashville, Tenn., on prevention and control of tuberculosis, and Miss Jessamine Whitney, New York, on vital statistics in Texas. The next annual session will be held in Abilene.

GENERAL

Society Disbanded—At the recent meeting of the Central States Pediatric Society in Chicago in September it was voted to disband the organization. The annual meeting will be replaced by a regional meeting of the American Academy of Pediatrics. The society was seventeen years old.

Change in Status of Licensure—The Nevada State Board of Medical Examiners reports the following actions on licenses at a recent meeting:

Dr. Charles Mortimer Stewart, Los Angeles, license revoked on ground of unprofessional conduct.

Dr. Burton William John, Portland, Ore., license revoked after investigation had convinced the board that it had been revoked without adequate cause. Dr. John had been licensed in Nevada in 1909 and the license revoked in 1913. The board reported that no record of any previous gain, loss, or other action prior to the revocation and that the report of the action was sent to Dr. John.

Results of Board Examination—Seventy-nine candidates were examined by the American Board of Otolaryngology in Boston, September 16, and thirteen were admitted or failed. The board will hold an examination in Cleveland, June 11,

1934, during the meeting of the American Medical Association and another at Butte, Mont., in connection with the meeting of the Pacific Coast Oto-Ophthalmological Society early in the summer of 1934. The date for the latter has not been determined. Prospective applicants for certificates should address the secretary, Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, for application blanks.

Orthodontists Deplore Misinformation Published—The American Society of Orthodontists at its last annual session adopted a resolution deploring misinformation and inaccurate advice in newspapers and other publications concerning malocclusion and associated deformities of the teeth. The advice given is frequently not in accord with the best practice and is also objectionable because, according to the resolution, it is impossible to make general statements of value on this subject owing to the fact that no two cases are alike. The society authorized the formation of a committee on public relations to cooperate with editors in preparation of accurate and useful information and to establish contacts with the public through the press, the radio and lectures before suitable groups.

Stolen—Anesthesia Research Apparatus—Dr. Paul M. Wood, 131 Riverside Drive, New York, reports that about \$1,500 worth of anesthesia apparatus and materials were stolen from his automobile, November 26. Much of the apparatus was especially built for research and is not of standard pattern. Every piece of metal was stamped with Dr. Wood's name or initial. Among the items taken were one gas-oxygen machine of the midget type Foregger make, special with seven jokes, two tanks of high pressure oxygen, one tank each of carbon dioxide, carbogen, nitrous oxide, ethylene and cyclopropane, several types of masks, two experimental fine control high pressure gas machines, several blood pressure outfits, five sets of spinal and regional anesthesia equipment with assorted needles, several laryngoscopes with tracheal catheters, one avertin outfit with avertin, and one resuscitation outfit. Money and other articles of value in the automobile were not touched. Dr. Wood would appreciate being notified at once should any physician be offered equipment bearing his name or scratched with the initial W. Reward is offered for any and all equipment recovered.

Tuberculosis in American Cities in 1932—The average death rate from tuberculosis in fifty-nine American cities with an approximate population of 33,000,000 was 56.3 per hundred thousand in 1932, as compared with 17.44 in 1910. Frederick L. Hoffman, consulting statistician, Newark, N. J., has recently made a detailed study of the mortality in 177 cities for 1931 and 1932. He found that in 115 cities the rate had decreased in 1932, in 60 it had increased and in 2 remained the same, as compared with rates for 1931. The five cities with the highest rates in 1932 were El Paso, Texas, 203.1; Little Rock, Ark., 154.4; Lexington, Ky., 154.3; Charleston, S. C., 151.3; and Augusta, Ga., 133.8. The report emphasizes two factors that complicate analysis of local tuberculosis mortality, namely, the racial factor and the concentration of tuberculous patients because of climatic advantages. The latter explains the high rate in El Paso and the former is also important because of the Mexican element in that city's population. These factors are also evidenced in reports of several states for 1932. New Mexico had the highest rate, 130.4, obviously because of the tuberculous concentration there and also because of the high death rate among the Indians. States with the next highest rates among the fifteen for which reports were available were Delaware, 62.9; Georgia, 61.7; Arkansas, 59.3; and New Jersey, 55. North Dakota had the lowest of the group, 24.4. Among the five largest American cities, Los Angeles had the highest rate, 77.1, and Chicago the lowest, 49.8. Here again the high rate in Los Angeles is attributed to the presence of numerous tuberculous patients and partly to the Mexican element. The lowest rates among the cities studied were Rockford, Ill., 10; Massillon, Ohio, 10; Grand Rapids, Mich., 10.8; Medford, Mass., 10.9; and Pontiac, Mich., 11.4.

CORRECTION

Medical Students in Rome—Figures received from the Regia Università di Roma (THE JOURNAL, August 26, p. 687, table 14) indicated that there were 132 American students enrolled during 1932-1933 and that 207 students completed the course. The figures being questionable further investigation was made and it is now ascertained that the total number of students from the United States registered in the faculty of medicine was 188, the number who graduated during the summer session of the academic year 1932-1933, 7, and the number of students who applied for permission to take the final degree examination during the current fall session, 6.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov 18, 1933

Chronic Typhoid Carriers

The Medical Research Council has published a report on chronic typhoid carriers by Prof C A Browning, F.R.S. A temporary carrier state may follow an acute attack of typhoid, and it is difficult to assign a limit to the duration of the excretion of specific organisms. A large proportion cease to excrete within six months of convalescence, and this appears to hold particularly for *Bacillus paratyphosus* A and B. The high incidence suggests the need of temporary precautions against the spread of infection during the convalescent as well as the acute phase. It is also important to remember that excretion in the feces, and especially in the urine, may set in several months after convalescence. It is agreed that those who continue to excrete bacilli after a year will not become cured spontaneously but become permanent carriers. These appear to amount to from 2 to 5 per cent of all cases of typhoid among British soldiers who have been invalided from abroad but when the disease is mild, as in England, the rate is probably lower. Chronic carriers may be fecal or urinary excretors. The fecal excretor may be a biliary carrier harboring the bacilli in the gallbladder, liver or bile ducts or a true intestinal carrier, in whom the bile is not infected, the bacilli persisting in the intestinal tract. The diagnosis of the latter depends on persistently positive cultures from the feces or intestinal contents and negative from the bile. It is not known whether the bacillus persists simply as one of the intestinal flora or whether the intestinal tissues are invaded. Chronic fecal carriers are usually married woman, aged 34 and onward. There are four or five female carriers to one male. In the cases of biliary carriers it is important to know whether the bacilli persist exclusively in the gallbladder or infect the bile ducts and liver tissue. The association of gallstones with the carrier condition is well recognized. Chronic cholecystitis has been found in a large portion of the carriers operated on.

Urinary carriers are often found in the latter part of the pyrexial stage of the disease or early in convalescence. But only a small proportion become chronic carriers, and, unlike the biliary carriers, these are not preponderatingly of one sex. This bacilluria is now held to be due to rupture of focal lesions into the renal tubules. If the bacilli persist in the urine, some pathologic condition of the urinary tract is the rule and the nidus is usually in the kidney or the pelvis. The bacilli may persist for years and cause extensive damage to the kidneys.

The chances of the spread of infection from patients suffering from typhoid have been greatly reduced by hygienic measures. In large cities the cases are mainly sporadic. They generally are attributed to a chronic carrier especially in rural areas, where they seem to be increasing in consequence of the tendency of city dwellers to make weekly excursions into the country. An important fact is that a carrier may transmit infection only at intervals, which may be separated by non-infective periods of years. But it seems unlikely, from the investigations of Browning and others, that the negative periods exceed more than six or twelve months.

Vaccination has not been found highly effective in preventing the persistence of organisms during convalescence but better results may be obtained from the potent strains now available. For the control of carriers, Browning thinks that there should be compulsory powers for examination of the blood, feces and urine. If a carrier is detected, his activities should be controlled and he should be prevented from handling food-

stuffs. In Scotland the local authorities have power to remove the carrier to a hospital or to isolate him. In England he can only be prevented from being employed in the preparation or sale of food. Cholecystectomy has proved successful in curing twenty-eight out of thirty-eight fecal carriers.

Progress in Radium Therapy

The Medical Research Council has issued a report summarizing the work of the research centers in 1932. Several of these indicate that skin tolerance—an important matter with the large quantities of radium now available—does not entirely depend on the time over which a dose is fractionated but varies with the region of the body and the blood supply. Thus the scalp seems to be about 50 per cent more tolerant than other parts of the skin. Regions with a depleted blood supply react less than normal areas, and the face is more tolerant than the neck. The advantage of spreading the dose over a long period is being more and more widely recognized. Hence at the Radium Institute many of the applicators of high content have been dismantled and smaller units have been constructed.

CANCER OF THE CERVIX

A modified technic has been adopted for cancer of the cervix with satisfactory results. Intra uterine and vaginal applications are still combined. By increasing the secondary screening of the vaginal applicators from 1 to 5 mm it has been found possible to increase the dose without exceeding the limits of tolerance. Vulcanite or bakelite is now used instead of para rubber. The applicators are spheroidal or cylindric, with rounded ends so that the pressure on the vaginal walls is more even. It is hoped that this will obviate the severe immediate reaction and delayed radium necrosis that used to occur when there was not sufficient room in the fornices for lead tubes, which were then inserted. The activity of the applicators has been increased from 10 mg of radium to 15 millicuries of radon. The primary screening is 15 mm of platinum, as before. The applicators are inserted under general anesthesia and left for forty-eight hours, forty-eight hours later a vaginal application is made in the knee-chest position under the influence of scopolamine and pantopon. A week after this combined application, another is given. The radon will be replaced by radium when more radium is available. The new dosage has not caused any local damage.

Food Poisoning Due to a Carrier

Two boys, aged 11 and 13 years, died after eating peas pudding (*THE JOURNAL*, November 11, p 1572). Six persons in all were hospitalized suffering from severe abdominal pains after eating this pudding. At the inquest Mr F H Teale, lecturer in bacteriology at University College, London, stated that he examined the supply of split peas from which the pudding had been made and found them free from infective bacteria. He also examined some of the peas obtained from the bag in which they had been cooked. In these he found dysentery bacilli. In a sample of the pudding he found quite a large number of these bacilli. A little girl had taken some of the pudding from the crock in which it was kept, with her finger. Although she had no symptoms she was found to be infected with dysentery bacilli. She was therefore a carrier and seemed to have infected the pudding in taking it with her finger—an unusual cause of food poisoning.

Pay of the Defense Services Pronounced Inadequate

The government recently appointed a commission to examine the reasons for the shortage of officers in the medical branches of the defense services. This has presented a report that has proved unsatisfactory to the Naval and Military Committee of the British Medical Association. The committee has informed the military authorities that while agreeing that the medical

services should be reorganized to improve professional opportunity and add to economic advantages, it cannot approve of the proposed means. It regrets that the commission should have deemed it necessary to impose a condition, not within its terms of reference, that its recommendations should not involve any increase of expenditure. The main criticism is that the rates of pay and pensions are inadequate. The policy of the government has involved a reduction of pay, and the possibility of further reduction is a constant grievance to the serving officers and a strong deterrent to young physicians contemplating military service. It is urged that the minimum rate of pay should be that which existed before the 3 per cent reduction was made at the time of the national emergency. It is also urged that the short service system, advocated by the commission, would militate against efficiency.

Wood Sugar

Dr Bergius, the inventor of the Bergius process of hydrogenating tar and coal, and one of the chemists principally responsible for the production of synthetic foods in Germany during the war, spoke at the Institution of Chemical Engineers on recent developments in the production of foods by chemical processes in Germany. Sugar could now be produced from wood on a commercial basis. The raw sugar in its primary form can after neutralizing be used as a carbohydrate cattle food. Experiments have given good results, especially in fattening pigs. The nutritive value is practically the same as that of barley flour. In countries in which wood is obtainable in large quantities—the Baltic states, Rumania and the north-eastern part of the United States and Canada—wood sugar could be produced at a lower price than cane sugar in the tropics. In England, dextrose could be produced at an extremely low price from imported wood. The wood sugar represents not only a cattle food but a source for the production of yeast as well as dextrose for human consumption. For the overpopulated European countries wood may become an important factor toward independence of a food supply from abroad in the same way that coal hydrogenation will in some degree insure independence of a foreign oil supply.

Tribute to Prof Rutherford Morison

Rutherford Morison, emeritus professor of surgery in the College of Newcastle on Tyne, has reached his eightieth birthday. He has been one of the greatest and most original of surgical teachers. He is living in retirement on a farm in Scotland. On his birthday, a party of twelve of his old house surgeons unknown to him, made a pilgrimage to his house. He was asked to come into his dining room, where they had assembled. The *British Medical Journal* states that as he entered his face was a study—surprise, delight and other emotions swept across it and also affected his visitors. Each was greeted by name and the senior made a presentation of two armchairs. He mentioned the professor's valuable writings, the great and many kindnesses they had all received from him and his discovery of the happy treatment of septic war wounds. The professor was in excellent form and old jokes and old memories enlivened a meeting that will never be forgotten by those present.

Sir George Makins

Sir George Makins, consulting surgeon to St. Thomas's Hospital and past president of the Royal College of Surgeons, has died in his eightieth year. In the Great War he was senior consulting surgeon to the British Expeditionary Force. He turned his experiences to account in an excellent research on wounds of blood vessel. He wrote the articles on rickets, diseases due to microbial infection and parasites in Treves's *System of Surgery* and on thrombosis, embolism, phlebitis and surgical tuberculosis in Hodge's *Dictionary of Surgery*. Among

the many professional bodies of which he was a member may be mentioned the American Surgical Association. Though his name is not identified with any special doctrine or discovery of a striking character, he stood in the first rank by reason of his knowledge, judgment and character. Quiet and unassuming, he was esteemed and loved as much as any man could be. It was plain to every one that he never acted from any but the highest motives.

Sir Arthur Keith's Successor

Dr John Beattie, associate professor of anatomy at McGill University, Montreal, has been appointed conservator of the museum and director of research at the Royal College of Surgeons, in succession to Sir Arthur Keith. Dr Beattie is a graduate of Belfast University, where he passed the examination for B.Sc. in 1920 with first class honors and obtained first place, and the M.D. examination in 1927, when he was awarded the gold medal. He was for a time research assistant and demonstrator in anatomy at University College, London.

PARIS

(From Our Regular Correspondent)

Oct 25, 1933

The International Congress on Hygiene

The twentieth annual Congress on Hygiene was held in the Pasteur Institute, October 23. The minister of public health presided. The congress had an international character. The United States was represented by Dr Hugh S. Cumming. The scientific sessions, over which Dr Dequidt, head of the public health service, presided, devoted the whole time to discussion of two main topics: (1) the economic crisis and the great hygienic undertakings, and (2) coordination of the anti-tuberculosis crusade and urbanism. Dr Dequidt brought out in his inaugural address that the economic crisis compels one to view in a different light the sanitary undertakings in the various countries. Such undertakings are, however, about the most practicable that can be devised to give work to the unemployed. The expenditures are compensated for, to a great extent, by the money that is saved in the construction and support of hospitals and by a diminishing general mortality rate. Of the 14,000,000,000 francs (\$840,000,000) that the French government has decided to use for large undertakings of general value, it is to be hoped that a large sum will be devoted to such health promoting projects as improvements in the drinking water, sewage systems, and better housing facilities. Dr Rochaix, professor of hygiene at the Faculté de médecine de Lyon, and Mr Vignerot, chief engineer for rural hygiene, both stated that France was behind some other countries in these matters but that great efforts had been made in France in recent years. Mr Krul, director of the bureau of water supply in The Hague, pointed out that, in the Netherlands, the rural districts have today a much more abundant supply of drinking water but that great difficulties are encountered in supplying large centers of population, which are constantly growing. He suggested international collaboration in the use of the waters of the Rhine for the supplying of large cities. Dr Salmon recommended that groups of rural communes unite in the establishment of a water system for each group as is done in the region of Boulogne sur mer, with the government defraying a percentage of the cost. Mr Giberton described a highly sensitive method for discovering traces of hydrogen sulphide in drinking water suspected of pollution. Mr Füss, head of the international bureau of labor of the League of Nations, advocated the use of the foregoing appropriations for the promotion of hygiene rather than for the increase of agricultural trial products which in all countries engenders misery as a result of overproduction. Vignerot emphasized the need of improving hygienic conditions in the rural sections which concerns in

France, 65 per cent of the population, and where child mortality is exceedingly high. Dr Barbary stressed the importance of soil pollution and the infection of fruits and vegetables consumed raw. Human excreta spread on fields from sewers is one of the most serious factors in the dissemination of typhoid and paratyphoid infections. He demanded that the spreading of sewage over agricultural fields be suppressed. Dr Iutrario, the delegate from Italy, described the progress that had been made in his country in supplying drinking water by means of aqueducts, wells, cisterns and the chlorination of river water. He referred to the aqueduct at Pouilles, a gigantic undertaking that supplies 260 inhabited centers, three entire provinces and parts of two other provinces serving thus a total of 2,600,000 persons. At present, 4,463 Italian communes are supplied through aqueducts with spring water. Mr Pittaluga, delegate from Spain, described the engineering feats accomplished to distribute the waters of the Ebro, Douro, Tagus, Guadiana, Guadalquivir, Segura and Jucar rivers. The French colonial ministry gave an account of what has been done to furnish drinking water for the inhabitants of overseas possessions.

On the second topic, "Organization of the Crusade Against Tuberculosis," there was not the same agreement. There was much discussion for and against the various systems proposed. Dr Chodsko, from Poland, emphasized that the crusade against tuberculosis should not be based on the same principles in the rural sections as in urban centers. He stressed as of primary importance the protection of children and the supplying of cities with sufficient food. In his opinion the tuberculous patient should not be separated from his family nor from his place of occupation longer than his condition permits, depending on the advice of his physician. He warned against tuberculous alcohol addicts, and particularly elderly tuberculous persons, who are frequently not sufficiently guarded against. Mr MacDougal described the success of the sanitary village of Preston Hall, in England, where the chief physician determines the periods of rest and work in the adjoining industrial establishments. Convalescent patients may live here at least five years and pay only a nominal rent. Not a single death from tuberculosis occurred among the children during the first year of life. Leclerc and Dujarric-de-la-Riviere said that there are not enough special hospitals for the treatment of tuberculous patients who will not be admitted to the sanatoriums, which makes it necessary to retain many contagious patients at home with their families. On no account should tuberculous persons be kept in a general hospital. There is a need they said of well organized medical centers where patients might be received who otherwise would wait long before securing a place in a sanatorium. Mr Armand-Delille told of the excellent results of the Grancher society, which finds homes in the country for children of tuberculous persons, it has many chapters in nearly all the departments of France. The children who remain with their families present a morbidity of 60 per cent and a mortality of 40 per cent. Among the children cared for by the Grancher society the morbidity has dropped to 0.3 per cent and the mortality to 0.1 per cent. Mr Vitry advocated the early discovery of cases of tuberculosis among school children through the aid of the school physician. Mr Messerli, from Switzerland, discussed the crusade against tuberculosis in his country. The law of 1928 brought about greater uniformity in the cantons of Switzerland, which, until then, had their own particular organization. Mr Carrozzi, of the international bureau of labor, discussed the effects of work on the development of tuberculosis and stated that that influence is but slight as compared with other social causes. He advocated constant cooperation between the inspectors of labor with the dispensaries and the institutions carrying on the crusade against tuberculosis. Mr Jullien made some criticism on the

villages for the tuberculous, which are in reality, he said, only sanatoriums with separate pavilions. They are not practicable for persons of moderate income, or they require enormous subsidies. It would be better to favor the return of tuberculous persons to rural life and seek to improve, at the same time, the hygienic conditions in rural communities. Mr Jullien and Mr Sieur emphasized that for the examination of recruits about to enter the army radiology should be widely used, as is done in Switzerland.

International Congress on the Protection of Children

The Congress international pour la protection de l'enfance divided its work into nine sections. "Prenatal Consultations" was the subject of an excellent paper by Convelaire and Lacomme, who pointed out the service that such consultations render in the prophylaxis of dystocias and the detection of syphilis. The second section devoted itself to the training of mothers to aid in combating child mortality. The interest of young women in these questions should be awakened after they finish school. Alaria of Turin and Valagussa of Rome explained how such education is given in Italy. Mr Morquio of Montevideo stated that there has been a chair of puericulture in Uruguay for twenty years and that the results are excellent. Mr Klem of Prague called attention to the part played by the radio in giving such instruction. Several members described the efforts put forth by the private organizations of which they are the directors. The third section devoted to the second period of childhood, discussed the care of children aged 2 to 14. Many unofficial communications were offered on physical exercise, the value of playgrounds, periodic examinations with record cards kept up to date, breathing exercises, and even instruction in singing. The fourth section took up the supervision of the physical development of adolescents. In the fifth section, devoted to abnormal children, Dr Boncour explained the practical methods of teaching mentally abnormal children a trade. The sixth section recommended giving social aid to children of school age. The seventh section considered the organization of instruction for illegitimate children and expressed the desire that such instruction be provided in all countries. The two other sections dealt with the protection of native children in the French colonies, on which a considerable number of communications were presented. There was also a lecture by Mr Calmette on the use of the BCG vaccine against tuberculosis.

BERLIN

(From Our Regular Correspondent)

Oct 23, 1933

Federation of All 'Biologic Physicians'

Dr Wagner, federal director of the medical syndicates, has issued a proclamation to "all physicians of Germany who use biologic methods of treating disease." He points out that "the healing art comprises a much wider range and more methods than we physicians, as a rule, have learned. In spite of the advances of science, 'it must be admitted that therapeutic methods that are not in harmony with the regular school sometimes present results that are not only equal but occasionally even superior to those secured by the regular practitioner.' Although lacking the sanction of the profession, these methods have become an inherent possession of the whole population. Gradually groups of lay practitioners have been formed, and today one finds in Germany several societies employing similar methods. While special features separate them from one another they have the common purpose of furthering man's use of nature's remedies. Physicians who apply chiefly 'nature's remedies' are spoken of as 'outsiders'. It is planned now to combine the societies and leagues of the

latter into a federation uniting the so called biologic physicians of all cults. Only after such a union, it is explained, will it be possible to test these therapeutic methods and to give them the recognition they deserve and to make them available for the training and further development of all physicians. It has been found that there is too little solidarity among these physicians to expect them to exert any marked influence on the medical profession as a whole or on the scientific conceptions of medicine.

The Causes of Death for 1931

The federal bureau of health has published an analysis of the statistics on the causes of death in the German reich for 1931. With the exception of the years 1927 and 1929, the number of deaths has declined continuously since 1924. The year 1931 brought a slight upward trend which was, however, confined to the first quarter. According to the preliminary reports, the year 1932 brought a further decline. The rates for the years 1930-1932 (about 11 per thousand of population) are far below the proportion for the last prewar year (148 per thousand). In 1931 the most marked increase in any direction concerned influenza during the first quarter. The deaths from other infectious diseases showed a decline. That was particularly true of puerperal fever, scarlet fever, measles, rubella (German measles), diphtheria, pertussis, typhoid and erysipelas. The tuberculosis mortality remained essentially unchanged. The deaths from diseases of the circulatory organs and from apoplexy showed an increase. The constant increase in the number of deaths from cancer and other neoplasms was caused in part by the present unusually high representation of the older age groups and in part by more accurate determination of the causes of death. The cancer mortality of the year 1931 (122 per 10,000 of population) was the highest observed since 1924. The proportion for women was considerably higher than for men (131 as to 113).

Instruction in Heredity Made Compulsory in the Schools

A decree of the Prussian minister of public instruction concerning instruction in heredity and in ethnology in the schools went into effect, October 1. Until a final revision of the curriculum has been completed, it is decreed that in the graduating classes of all schools, the following subjects must be incorporated in the curriculum: science of heredity, ethnology, eugenics, family history and demographic science. The essential basis for such instruction will be biology, for which, according to the decree, an adequate time (from two to three hours a week), if necessary at the expense of mathematics and foreign languages, must be found. Since biologic thinking is to constitute the basis of instruction in all branches, likewise other subjects, such as German, history and geography, must be brought into the service of such instruction. In all final examinations, every pupil must be tested as to his knowledge of the new subjects and no person may be exempted from such tests. The minister will appoint commissioners to supervise the results of the examinations.

Prof Werner Korte Honored

Prof Werner Korte, who was for many years the surgical director of the Berlin Urban-Krankenhaus, celebrated his eightieth birthday, October 21. His father had occupied a leading position in the medical profession in Berlin and for that reason his son is still spoken of as 'der junge Korte.' Through his collaboration with Albert Fraenkel, internist of the hospital, he was able to bring about a wide development of surgery of the internal organs so that he was counted among the most eminent surgeons of Germany. His books on surgery of the liver and of the pancreas are still regarded as classics. From 1899 on he was editor of *Deutsche Zeitschrift für Chirurgie*

and of the *Deutsche Gesellschaft für Chirurgie*, a post which he resigned only a few years ago.

Reorganization of Instruction in Hygiene

In institutions of higher learning an endeavor is being made to reorganize the instruction in hygiene. It is planned to make the instruction in ethnology and hereditary science of health a special branch of hygiene forming a part of general hygiene, whereas bacteriology is to be taught separately from hygiene. Ethnology and hereditary science of health are no longer to be regarded as auxiliary subjects of hygiene but will be given a standing consistent with their importance in that portion of the curriculum dealing with the care of public health.

Professor Duhrssen's Death

The death, in Berlin, of the gynecologist Prof Alfred Duhrssen, at the age of 72, is announced. While serving as assistant of Gusserow, at the Charité-Frauenklinik, in Berlin, he devised Duhrssen's tampon for the prevention of fatal hemorrhage in childbirth. He became even more widely known in connection with his "vaginal cesarean section," which he first described nearly forty years ago. He introduced a number of other operations or improvements in well known methods. He worked indefatigably for reforms in obstetric practice.

ITALY

(From Our Regular Correspondent)

Oct 1, 1933

Surgical Treatment of Duodenal Ulcer

Professor Cavina recently gave the Accademia medico-fisica of Florence a demonstration of the Judd operation for the treatment of duodenal ulcer. The operation consists in excision of the ulcer, together with a partial pylorotomy, which comprises the resection of the two anterior thirds of the sphincter. This operation eliminates two of the chief symptoms of duodenal ulcer, namely, stasis and gastric hyperacidity. The same purposes can be attained also by gastrojejunostomy, which, however, leaves the ulcer in situ and exposes the patient to the risk of jejunal ulcer. The Judd operation is indicated in young persons, provided the duodenum is sufficiently mobile and not too much distorted, and in recent ulcers of the stomach wall, anterior to the bulb. Such conditions of operability are found in about half the cases.

The results are fairly satisfactory. According to statistics of the Mayo Clinic (1930), in 464 interventions only two deaths occurred, and of 369 patients who could be followed up the results were satisfactory in 90 per cent.

In recent months the speaker operated on seven patients with duodenal ulcer, and in every case the immediate results were excellent. The only untoward symptom was a grave pulmonary complication. The postoperative period of observation has not been long, but the results thus far appear favorable. Postoperative examination of the gastric contents tends to show an effective reduction of acidity. Radiologically the evacuation of the opaque medium in the cases examined took place in normal time—in one case with precipitation.

Increase of Foreign Students in the Universities

According to a report of the Istituto centrale di statistica, the number of foreign students enrolled in the universities of Italy was 487 in 1913, 700 in 1921, 1922 and 2,287 in 1932, 1933. There has been an increase of 470 per cent in about twenty years. The foreign students constitute 45 per cent of the entire student population of the Italian universities and the institutions of higher learning. Sixty-four per cent of the foreign students are enrolled in the faculties of medicine and surgery. The universities of Pavia (400) and of Rome (329) have the largest representation of foreign students. With

regard to nationality, the largest groups are from Russia, Poland and the Baltic states (540), Rumania (392), and the United States (365)

Biologic Study of Woman

In the Istituto biotipologico of Genoa, Prof. Nicola Pende and his associates are pursuing research on the somatic and functional differences between the Italian woman and the fundamental ethnic stocks from which she is sprung. The first results secured concern the Ligurian woman. In Liguria, at least five chief racial types can be distinguished. The differentiation is often difficult, owing to the numerous crossings that have occurred, but it is not impossible, says Pende, in 68 per cent of the cases. The five racial variants are the Mediterranean, the Alpine, the Nordic, the East Baltic and the Dinaric (or Adriatic) races. The Mediterranean, the Alpine and the Adriatic races are dark, the other two are blond. Studying the five races from the point of view of fecundity, these workers found that the Italian woman of Mediterranean race (who is dark) occupies the first position and in 85 per cent of the cases presented hyperfecundity or normal fecundity. On the contrary, among the women of the blond races they found a high percentage of infecundity or low grade fecundity amounting to not less than 68 per cent among the women of Nordic type. The middle position characterized the women of Alpine type, who present 45 per cent of hypo-ovarian subjects with little or no fecundity and 55 per cent with normal ovarian activity and normal fecundity. Also from the point of view of organic and functional robustness the woman of Mediterranean race occupies the first position showing herself to be sthenic in 66 per cent of the cases and asthenic in 34 per cent. On the contrary, the women of blond type are robust and sthenic in about 35 per cent of the subjects.

In the Mediterranean type of woman and in the blond Nordic type the longilineal body form prevails, while in the Alpine and East Baltic types there is a preponderance of the brachymorphic form.

In the women of the Mediterranean type and of the blond Nordic type, the nervous system shows a predominance of the sympathetic system, in the women of Alpine and East Baltic types there is, however, a dominance of the vagus and of the parasympathetic system.

BUDAPEST

(From Our Regular Correspondent)

Oct 23, 1933

Was Semmelweis a Hungarian?

The Swabians, who were Saxons, at one time contested the Hungarian origin of Semmelweis, stating that he was of German nationality. In a recent address before a medical society Dr. Alois Konrad, a pupil of Semmelweis, presented arguments that left no doubt as to the Hungarian origin of Semmelweis. He stated that formerly the Viennese Germans forced Semmelweis on Hungarians but now acknowledge that he was a Hungarian. When the theories of Semmelweis were new and he was being attacked, he was called "the fool of Vienna." He obtained a lectureship only after his second application, and even then for a long time an attempt was made to suppress his name. Today, educated foreigners recognize his Hungarian nationality. The Austrian obstetrician Chrobak regarded him as the greatest son of Hungary. Wyder, professor of obstetrics at Zurich, Switzerland, wrote a treatise about "the great son of Hungary." Johannes Grosse of Dresden in his obstetric monograph, published in 1898, devoted a special chapter to proving that Semmelweis was of Hungarian origin. Many other references of a similar nature could be enumerated. Semmelweis was born in Buda, Hungary, and his brothers fought in the war against Austria in 1848-1849. With the

exception of three university years, Semmelweis was educated in Hungary. That a major part of his medical studies were made in Vienna can be attributed to the fact that at that time the great trio, Rokitsansky, Skoda and Hebra were teaching there. Semmelweis returned to Hungary in 1850 and applied for a hospital position. The original letter is in the archives of the city of Budapest under the number 17551, 1850. He wrote: "Though up to now I have exercised my medical knowledge in Vienna, henceforth I wish to settle as a practitioner in my fatherland, and especially in my birthplace." Eleven years later, in a letter addressed to the Hungarian Scientific Academy, he wrote: "Fate brought on events in such a way that when I made the discovery in 1847 I was beyond the boundaries of my fatherland, serving as a physician to the Vienna obstetric clinic."

He wore the Magyar national dress at a time when not every Magyar dared to do so. He was one of the first to lecture in the Hungarian language when most professors used German. The fact that Semmelweis wrote his great treatise in German originated, he said, in his desire to write in the language of those who did not accept his doctrines and on whom he wanted to make an impression. However, the essential details of his doctrines were published in the Hungarian language in 1858 in the *Orvosi hetilap* under the title "The Prophylaxis of Puerperal Fever" and again in 1860 under the title "Difference of Opinions Between Myself and English Physicians in Regard to the Origin of Puerperal Fever." His book appeared in German in the year 1861. Thus nothing remains but his German sounding name and the circumstance that one of his ancestors lived in Germany. But it is certain that his parents lived and were born in Hungary. Now, after all this, if any one considers that Semmelweis was not a Hungarian it would be just as erroneous as to say that Aristotle was not a Greek because he was born in Macedonia and learned the Greek language later on or that Richard I was not an English monarch because he was a Plantagenet and therefore of French origin.

Semmelweis was a Hungarian, and posterity will ever know him as such.

Free Choice of Physician Under Health Insurance

The Hungarian Medical Association recently took the position that the principle of free choice of physician must be adopted by every sickness insurance society. This decision is apt to transform the whole of medical practice with the insurance corporations. This question was the subject of endless discussion in medical circles. Those who are employed at present by corporations with a more or less fixed salary are not anxious to change a sure income for a position which is to be created at a later date. Those without a fixed salary or position take the stand that medical practice is a free profession in which everybody should prosper according to his ability and knowledge. Thus the profession has split into two groups. Both agree that those already employed cannot, by any means, get in a worse position. The transition will be difficult but not impossible. It is an advantage to the Hungarian medical profession that there are already examples from which they may adopt what is good. Both parties agree to adopt the French system whereby members of the sickness societies contribute, to a certain extent, to the costs of the drugs used. From the German system they wish to copy the ambulatory system, that is to say, the erection of several district dispensaries in large cities, where physicians work in turn for three hours.

There are also many problems that concern memberships in the sickness societies. Owing to critical financial circumstances in Hungary the ministry of public welfare has liberalized the income limit and that will make it possible for three fourths of the population to have access to social insurance. The elastic income limit will give rise to frequent abuses and will

remove many better class families from the sphere of private practice

Another ticklish question is how to produce the increased funds needed for the salaries of the increased number of physicians. In view of the fact that the membership fee cannot be increased under present circumstances, the only solution is that the state must contribute more to the expense of the insurance societies. After lengthy consideration the government acceded to this solution of the problem, with the reservation that its contribution be merely temporary and last only until present circumstances improve, when both employers and employees can pay higher insurance premiums

Marriages

OSCAR NOEL MORISON Cedar Grove N. J., to Mrs Ruth Bryant Reid of Southern Pines, N. C., in Roanoke, Va., October 12

ZEKE CANDLER GAMMEL, Old Hickory, Tenn., to Miss Marion Houston Tanksley of Birmingham, Ala., November 4

ELMER A. LARSEN, Centerville, Iowa, to Miss Favre Mae Smith of Des Moines at Clinton, October 21

ARTHUR WESLEY KISTNER, Elkhart, Ind., to Miss Virginia Droz at Washington, Iowa September 2

FRANCIS DRING WETHERILL LUKENS to Miss Emma Martyn George, both of Philadelphia, in October

SAMUEL MOIR RICKMAN, Louisville, Ky., to Miss Rosemary Leila Honker of Decatur, September 3

EDWARD JOHN KLOESS, Belleville, Ill., to Mrs Beulah Scott Mason of Leadwood, Mo., October 9

PAUL E. SWANSON, Peoria, Ill., to Miss Elizabeth Christensen of Virginia, Minn., September 2

WILLIAM A. SANDES, Soldiers Grove, Wis., to Miss Eda Nederloe of Mount Sterling, July 10

GERSHOM JOSEPH THOMPSON, Rochester, Minn., to Miss Myrtle Tews at Iowa City, July 16

PAUL T. OKLEFE, Waterloo, Iowa, to Miss Marian Brouillard of Charles City, October 11

HENRY HAMAN HAMILTON to Miss Frances Allen both of Cedar Rapids Iowa, in October

ANDREW LE ROY KARABIN, Chicago, to Miss Clare Hazinski of South Bend Ind., October 31

CHARLES C. RUSSELL to Miss Winnie Greeson, both of Chitworth, Ga., September 24

DAVID PAUL LIEBERMAN to Miss Selma Kaufman, both of Elizabeth, N. J., November 12

LEONARD AVERY HALLOCK to Mrs Lettys Curtis Jackson both of New York, October 27

HAROLD V. HOTTER Kansas City, Kan., to Miss Martha Louise Louder, November 3

ELMER E. KOTKE to Miss Doris Mae Coover, both of Des Moines, Iowa September 29

WILLIAM GARIAND HECKS to Miss Lucia Bell Page, both of New York September 9

SOLOMON SCHWAGER to Miss Evelyn Johnson both of Pittsfield Mass. November 10

ROLAND I. SCHACHT, Racine Wis. to Miss Helen L. Allman of Marshfield June 29

ROCCO JOHN FAZIO to Miss Concetta Anna Vacca both of Chicago October 21

HERBERT L. KOEPKE to Miss Martha Porter both of Cadiz Ohio September 12

WILFRED I. RIVERA Eastover, S. C. to Miss Mildred Tilghurst August 1

IRIDNECK E. VEST to Miss Ruth Larimer, both of Topeka Kan. October 10

GEORGE W. LACY to Miss Camilla Fort both of Fort Worth Texas recently

SIMON LOFF SINGER Richmond Hill N. Y. to Miss Hilda Lind Feb. 11

DAVID H. LANDO to Miss Janet Cohen both of Milwaukee June 28

Deaths

Alexander Quackenboss, Boston, Harvard University Medical School, Boston, 1892, member of the Massachusetts Medical Society, at one time professor of ophthalmology at the Dartmouth Medical School, Hanover, N. H., and Williams professor of ophthalmology at his alma mater, served during the World War, formerly on the staffs of the Massachusetts Eye and Ear Infirmary, the Massachusetts General Hospital and the Infants Hospital, aged 67, died, October 27, of metastatic carcinoma

Samuel Brown Hays, Lakeland, Ky., Kentucky School of Medicine, Louisville, 1902, member of the Kentucky State Medical Association and the American Psychiatric Association, at one time assistant to the chair of eye, ear, nose and throat, University of Louisville School of Medicine, Louisville, served during the World War, formerly on the staff of the Central State Hospital, aged 54, died, November 14, in Cloverport, of heart disease

Eldridge Eakin Wolff Cambridge, Md., University of Maryland School of Medicine, Baltimore, 1899, past president of the Medical and Chirurgical Faculty of Maryland and the Dorchester County Medical Society, member of the state board of medical examiners, formerly health officer of Cambridge, on the staff of the Cambridge Hospital, aged 59 died, November 7, of chronic nephritis and valvular heart disease

Holton C. Curl Medical Director, Captain, U. S. Navy, New York, Drake University Medical Department, Des Moines, 1893, University of California Medical Department, 1897, fellow of the American College of Surgeons, entered the navy in 1898, served during the World War formerly assistant to chief of the Bureau of Medicine and Surgery, aged 61 died, November 9, of angina pectoris

Lee Collins Redmon Lexington, Ky., University of Louisville School of Medicine, 1907, fellow of the American College of Surgeons, past president and secretary of the Fayette County Medical Society, formerly medical director of the public schools in Lexington, on the staffs of St. Joseph's Hospital and the Good Samaritan Hospital, aged 48, died, October 27, of carcinoma

George Francis Kelleher Postville, Iowa, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911, past president of the Allamakee County Medical Society aged 46, died, October 23 of injuries received when the automobile in which he was driving struck a monument

Patrick Henry Hourigan Buffalo, Niagara University Medical Department, Buffalo 1893, associate in hygiene and public health, University of Buffalo School of Medicine, aged 63, on the staff of the Millard Fillmore Hospital, where he died, November 7, of lobar pneumonia and agranulocytosis

George Childs Macdonald, San Francisco, L.R.C.P., Edinburgh, Scotland, 1883, M.R.C.S., England, 1884, Université libre de Bruxelles Faculté de médecine, 1886, F.R.C.S., Edinburgh Scotland, 1887 formerly on the staff of St. Mary's Hospital, aged 72, died October 13, of heart disease

John Bynum, Winston-Salem, N. C., University of the City of New York Medical Department New York 1892 member of the county board of health member of the Medical Society of the State of North Carolina, aged 73 died, November 2, in the Duke Hospital, Durham, of thrombosis

George Punshon Bawden, Moose Jaw, Sask. Canada Manitoba Medical College, Winnipeg 1906, fellow of the American College of Surgeons, aged 60, on the staffs of the Providence Hospital and the Moose Jaw General Hospital, where he died August 9, of coronary thrombosis

William Alvis Guthrie, Franklin, Ky. University of Tennessee Medical Department Nashville, 1889, member of the Kentucky State Medical Association medical superintendent and owner of the Southern Kentucky Sanatorium aged 69 died November 9 of cerebral hemorrhage

Herman Jeffery Lichte Philadelphia University of Pennsylvania School of Medicine Philadelphia 1930 aged 25 formerly an intern at the Hospital of the University of Pennsylvania where he died September 12, of mastoiditis and pneumococcal meningitis

Maurice Oberlin Putt, Oberlin Pa. University of Pennsylvania School of Medicine Philadelphia 1873 member of the Medical Society of the State of Pennsylvania aged 81 died September 29 in the Harrisburg (Pa.) Hospital of arteritis obliterans

John Raymond Nagle, Worland, Wyo., University of Nebraska College of Medicine Omaha, 1927, member of the Wyoming State Medical Society, county coroner, formerly member of the state board of health, aged 37, died, October 31, of pneumonia

Daniel Brewer, Fairbury Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1876, Hahnemann Medical College and Hospital, Chicago, 1877, member of the Illinois State Medical Society, aged 90, died, November 1, as the result of a fall

Leon Watson, Broadway, N. C., North Carolina Medical College, Davidson, 1900, member of the Medical Society of the State of North Carolina, bank president, aged 55, died November 2, in the Lee County Hospital, Sanford, of cardiovascular disease

Patrick Joseph Paul Hamill, Jersey City, N. J., Columbia University College of Physicians and Surgeons, New York, 1904, member of the Medical Society of New Jersey, on the staff of St. Francis Hospital, aged 52, died, November 2, of heart disease

Samuel Robert Herring, Warren, Ark., Tulane University of Louisiana Medical Department, New Orleans, 1900, member of the Arkansas Medical Society, proprietor of a hospital bearing his name, aged 62, died, October 28, of cirrhosis of the liver

John Chivers Stafford Lappeus ♂ Binghamton, N. Y., University of Buffalo School of Medicine, 1904, fellow of the American College of Physicians, on the staff of the Binghamton City Hospital, aged 55, died, November 17, of acute nephritis

Gustav A. Kletzsch, Milwaukee, Bellevue Hospital Medical College, New York, 1882, formerly professor of gynecology, Wisconsin College of Physicians and Surgeons, aged 76, died, November 9, in the Milwaukee Hospital, of pernicious anemia

James Henry Eddy, Lakewood Ill., College of Physicians and Surgeons of Chicago, 1889, formerly a member of the school board, aged 70, died, November 9, in the Shelby County Memorial Hospital, Shelbyville, of injuries received in a fall

Gaston Rene De Cotret, Montreal, Que., Canada, School of Medicine and Surgery of Montreal, 1915, formerly professor of obstetrics, McGill University Faculty of Medicine, on the staff of the Hôpital Ste. Justine, aged 42, died, October 10

James Lawrence Halsey, Islip, N. Y., Bellevue Hospital Medical College, New York, 1888, member of the Medical Society of the State of New York, past president of the Suffolk County Medical Society, aged 73, died, November 15

Henry A. Dedman ♂ Canby, Ore., University of Oregon Medical School, Portland, 1896, mayor of Canby, formerly bank president and member of the school board, aged 68, died October 28, of embolism and arteriosclerosis

William A. Knowlton, Cleveland, Charity Hospital Medical College, Cleveland, 1867, Civil War veteran, aged 94, died, November 10, in the Fair Oaks Villa Sanatorium, Cuyahoga Falls, Ohio, as the result of a fractured hip

John Albert Burke, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878, aged 79, died, October 25, at his summer home in Pittsfield, Mass., of chronic myocarditis

Eugene Robert McMurray ♂ Bartow, Fla., Rush Medical College, Chicago, 1897, formerly secretary of the Polk County Medical Society, on the staff of the Bartow General Hospital, aged 59, died, October 25, of endocarditis

Romulus Adams Foster, Washington, D. C., Columbian University Medical Department, Washington, 1874, member of the Medical Society of the District of Columbia, aged 81, died October 26, of cerebral embolism

Frank Martin Patton ♂ Elkhart, Ind., Rush Medical College, Chicago, 1922, on the staff of the Elkhart General Hospital, aged 37, died, October 27, in the Washington Boulevard Hospital, Chicago, of acute leukemia

John Wellington Felty ♂ Hartford, Conn., Jefferson Medical College of Philadelphia, 1884, fellow of the American College of Surgeons, surgeon to the Charter Oak Private Hospital, aged 73, died, October 15

George Powers Quinn, Erlanger, Ky., Chicago College of Medicine and Surgery, 1917, served during the World War, aged 42, died, October 18, in St. Elizabeth's Hospital, Covington, of pleurisy with effusion

Vernon Llewellyn Oler ♂ Calumet, Mich., University of Maryland School of Medicine, Baltimore, 1911, served during the World War, aged 47, died suddenly, November 16, at his home in Laurium, of heart disease

Phineas Hillhouse Adams ♂ New York, Columbia University College of Physicians and Surgeons, New York, 1909, on the staff of the Bellevue Hospital, aged 50, died, November 9, of cerebral arteriosclerosis

Charles Herman Armstrong, Preston Iowa, Bennett College of Eclectic Medicine and Surgery, Chicago, 1907, member of the Iowa State Medical Society, aged 53, died, November 11, of carcinoma of the throat

Claude A. Adams, Durham N. C., College of Physicians and Surgeons, Baltimore, 1892, member of the Medical Society of the State of North Carolina, aged 62, died, November 8, of carcinoma of the pancreas

Edward Engleton Moore, Wilmette, Ill., Dartmouth Medical School, Hanover, N. H., 1884, aged 77, died, November 1, in the Kankakee (Ill.) State Hospital, of senile dementia and chronic myocarditis

Alphonso Holland Carvill, Somerville, Mass., Harvard University Medical School, Boston, 1869, for ten years member of the school committee, aged 90, died, November 3, of cerebral arteriosclerosis

Jacob Jacobson ♂ New York, Universität Bern Medizinische Fakultät Bern, Switzerland, 1927, aged 39, died, November 17, in the Mount Sinai Hospital, of agranulocytosis and bronchopneumonia

Thomas Tyler Wheeler, Trussville, Ala., Chattanooga (Tenn.) Medical College, 1900, aged 57, died, October 13, in the Norwood Hospital, Birmingham, of a gangrenous gallbladder with stones

Mildred Jenks McKee ♂ Sturgis, Ky., Johns Hopkins University School of Medicine, Baltimore, 1916, formerly a medical missionary in China, aged 46, died, October 29, of brain tumor

William Worman Livingood, Robeson, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1899, aged 57, died, October 25, in the Reading (Pa.) Hospital, of pneumonia

William Smith Philips, Belle Center, Ohio, Columbus Medical College, 1882, formerly councilman, mayor and member of the board of education, aged 80, died, October 26, of pneumonia

John A. Jackson, Ronceverte, W. Va., University of Louisville (Ky.) School of Medicine, 1887, formerly mayor of Ronceverte, aged 72, died suddenly, October 26, of heart disease

Franklin J. Oshay, Ladd, Ill., Rush Medical College, Chicago, 1889, aged 71, died, September 26, in the East Volume State Hospital, Moline, of chronic nephritis and myocarditis

Benjamin W. S. Wiseman, Culver, Ind., College of Physicians and Surgeons, Keokuk, Iowa, 1880, for eight years postmaster, aged 81, died, November 4, of cerebral hemorrhage

Edgar McCormick, Jackson Center, Ohio, Medical College of Ohio, Cincinnati, 1888, member of the Ohio State Medical Association, aged 67, died, November 5, of heart disease

Edward Lee Batts ♂ San Angelo, Texas, University of Texas School of Medicine, Galveston, 1897, on the staff of St. John's Hospital, aged 61, died suddenly, November 1

Charles Edward Hall, Atlanta, Ga., College of Physicians and Surgeons, Medical Department of Columbia College, 1895, aged 68, died, October 22, of carcinoma of the prostate

Clement O. Sullivan, Monee, Ill., Chicago College of Medicine and Surgery, 1912, aged 47, died, October 26, of an overdose of morphine, presumably self-administered

John Hardeman Heard, Macon, Ga., Jefferson Medical College of Philadelphia, 1881, member of the county board of education, aged 78, died, November 3, of endocarditis

Cyril P. Kirley, Louisville, N. Y., Kentucky School of Medicine, Louisville, 1875, member of the Medical Society of the State of New York, aged 80, died, November 3

Edgar Dwight Hill ♂ Plymouth, Mass., Medical School of Maine, Portland, 1877, on the staff of the Jordan Hospital, aged 78, died, November 4, of heart disease

Samuel James Marks ♂ Bordentown, N. J., New York Homeopathic Medical College and Flower Hospital, New York, 1914, aged 43, died, October 28

Patrick Joseph Clark, Secaucus, N. J., Atlantic Medical College, Baltimore, 1909, aged 49, died, July 11, in the Hudson County Hospital, of heart disease

John Emmans De Mund, Montclair, N. J., Albany (N. Y.) Medical College, 1890, aged 67, died, November 11, of arteriosclerosis and hypertension

Bureau of Investigation

ANOTHER HAY FEVER TREATMENT

The "New Filtration Method" of Edwin S Leach, M D

For the past six or seven years the Bureau of Investigation has been receiving requests from physicians and others regarding what is called the "New Filtration Method" in the treatment of hay fever and allied conditions, said to have been originated by a Dr Edwin S Leach of Junction City, Kan. As specimens of the inquiries received, the following are more or less typical

I enclose a pamphlet gotten out by an osteopath in Billings. Will you kindly inform me what this Filtration Method for the treatment of hay fever is? —(From a Montana physician)

Can you give me any information on the treatment of diseases of the air passages called the Filtration Method originated by Dr E S Leach? Osteopaths are advertising this system of treatment as a positive cure for colds hay fever asthma etc —(From an Idaho physician)

May I have information relative to the Leach Clinics operated by Dr Edwin S Leach of Junction City, Kansas? The Medical Herald and Physio Therapist of Kansas City Mo published an article relative to the Filtration Method for relief and cure of hay fever and asthmatic patients. The cure is guaranteed —(From a Kansas physician)

Will you please inform me whether or not Dr E S Leach at Junction City Kan is a member in good standing of the A M A? What is his medical status? —(From a Wisconsin physician)

Being unable to find any information in the literature relative to the Clinics [Leach] named in the enclosed brochures will you kindly advise me of the status of the work as outlined therein? —(From a California physician)

These are fairly typical of the inquiries that come in regarding the subject matter of this article. Dr Edwin S Leach of Junction City, Kan, according to the records of the American Medical Association, was born in 1867 and holds a diploma from the Ensworth Medical College, St Joseph, Mo, issued in 1894. He was licensed in Missouri in the same year and in Kansas in 1916. He is reported to have taken the California examination in 1924, but failed. According to the medical directories, Dr Leach was at Marshall, Mo from 1900 until 1909. Then his name is not found in either the old Polk's Directories or in the American Medical Directory until 1914 when it appears in Junction City, Kan, where it has been from that time on.

Dr Leach is not a member of his local medical society nor of course, of the American Medical Association. Incidentally, Dr Leach has given as his excuse for not being a member of the American Medical Association the fact that Geary County, in which Junction City is located, has no county medical society. This is not correct. Geary County has a medical society, although it is true that it did not come into existence as an entity until August, 1932. However, before that society was created out of the eleven physicians (including Dr Leach) who practice in Junction City, Kan, eight of them held membership in the Kansas State Medical Society and therefore, of course in the American Medical Association. Obviously, there is another explanation for the fact that Dr Leach is not a member of his state or the national organization.

In 1926 Dr Leach was putting out a sixteen page advertising booklet entitled Facts New and Old Concerning Hay Fever and Rose Cold The New Method of Treatment Originated and Perfected by Edwin S Leach, M D Rhinologist of Junction City Kan. The booklet was addressed to the public and was an elaborate puff for Dr Leach's treatment which was described as the first and only real cure. The hay fever public was urged to lose no time in coming to Junction City for treatment as owing to the great demand for the treatment we will soon book up to the limit of our present facilities. With a letter sent out by Dr Leach to a layman in 1926 there went a printed Report Blank asking certain questions regarding the proposed patient and on the reverse side of the blank the recipient was asked to fill in the names and addresses of at least five of your friends afflicted as you are that we may send to them our liberal offer until we have booked our full quota.

On Oct 8 1928 Dr Leach submitted to THE JOURNAL an article entitled Hay Fever Its Cause Pathology and Treat

William Anthony Dotson, Freeburn Pike Ky Kentucky University Medical Department, Louisville, 1906, aged 55, was shot and killed October 29

Andrew Francis Hoff, Casper, Wyo. Drake University Medical Department, Des Moines, Iowa, 1898 aged 74, died, November 3, of acute dysentery

John Sinclair Leonhardt, Los Angeles, College of Physicians and Surgeons, Keokuk, 1879, aged 74, died September 6, of carcinoma of the bladder

Leo Horatio Hall, Edes Falls, Maine, Long Island College Hospital, Brooklyn, 1885, aged 71, died, August 5, of gangrene of the right foot

John W Martin, Coldwater Mich Bennett College of Eclectic Medicine and Surgery, Chicago, 1877, aged 80, died, November 18, of senility

Charles Berrien Hall, Chicago, Hahnemann Medical College and Hospital, Chicago, 1886, aged 73, died, November 14, of chronic myocarditis

John A MacGregor Kansas City, Kan Trinity Medical College, Toronto, Ont, Canada, 1890 aged 70, died, October 2 of encephalitis

Louis Martial Pelletier, Rigaud, Que, Canada, School of Medicine and Surgery of Montreal, 1889, aged 69, died suddenly, September 16

William Henry Bryant, Louisville Ky Leonard Medical School, Raleigh, N C 1905, aged 53, died, September 4, of coronary thrombosis

Charles Sherman McCarty, Muscatine, Iowa State University of Iowa College of Medicine Iowa City, 1888, aged 69, died, October 3

Jessie B Brown, McGregor, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1896, aged 60 died November 2

John Thomas Hamilton, Kansas City Mo, Missouri Medical College, St Louis, 1882, aged 77, died, November 6, of heart disease

Thomas Jefferson Carr, Corryton, Tenn Tennessee Medical College, Knoxville, 1893 also a minister, aged 73 died, October 24

Homer Corbett Edwards, Piedmont, Calif, University of Michigan Medical School, Ann Arbor, 1892, aged 64, died, August 25

Marmora De Voe Moody, Seattle, Homeopathic Hospital College Cleveland, 1877, aged 85 died October 14 of lobar pneumonia

Arlington R Havens, Blackwell Okla, Barnes Medical College St Louis, 1901 aged 64, died, in October, of septicemia

Herschel Halleck Stoner, West Los Angeles, Calif St Joseph (Mo) Medical College, 1885 aged 72, died September 25

Ulysses Grant Mason, Chicago Meharry Medical College, Nashville, Tenn, 1895, aged 60 died October 5, of coronary occlusion

John H G Reed Epes Ala Louisville (Ky) Medical College 1890, aged 65 died September 16, of carcinoma of the liver

Fred Albert Starbuck Abilene Texas Eclectic Medical University, Kansas City, Mo 1902 aged 72 died, September 25

John Timothy Connelly Bayonne N J Harvey Medical College Chicago 1898, police surgeon, aged 59 died October 31

Thomas Henry Bier, Brantford Ont Canada University of Toronto Faculty of Medicine, 1896, aged 59 died August 19

John Charles Calhoun Pittsburgh Cleveland Medical College 1897 aged 61 died October 30 of uremia and nephritis

Theodore S Jennings Louisville Ky Louisville (Ky) Medical College, 1887 aged 83, died November 12 of nephritis

Charles Sumner Kellogg, Glendale Calif Eclectic Medical Institute Cincinnati 1881, aged 74 died September 19

George Douglas Pratt Soquel Calif California Medical College San Francisco 1898 aged 57 died September 15

Allan Gibson Guelph Ont Canada University of Toronto Faculty of Medicine 1895 aged 65 died September 27

Benjamin Sides Pennington Altadena Calif Keokuk (Iowa) Medical College 1891 aged 76 died October 2

Harry Lee Randal Philadelphia Jefferson Medical College Philadelphia 1901 aged 66 died September 25

ment," and suggested to the editor that he was sure that the article would "prove a most interesting subject to your readers" because the "Filtration Method has awakened tremendous interest on the part of hundreds of nose and throat men of the country." The same article that Dr Leach submitted to THE JOURNAL for publication had already appeared in the July issue of the *Western Medical Review*, although this was not the basic reason for rejecting the manuscript. The same article appeared in the October, 1928, issue of the *Western Medical Times* and again in the May, 1929, issue of the *Medical Herald and Physio-Therapist*. What is essentially the same article rewritten appears in the *Eye Ear Nose and Throat Monthly* for June, 1933, under the title "The Basic Etiology of Hay Fever." These two articles seem to be the only contributions that Dr Leach has made to medical literature in his nearly forty years of practice.

What is the Leach "Filtration Method?" Apparently it is essentially a slogan used to persuade medical men that it is necessary for them to take a "course" of instruction from Dr Leach in order successfully to treat hay fever with a proprietary medicine that Dr Leach has devised, sold under the name of "Rhino-Form" ("Two ounce, double strength, \$2.00"). The medical profession for some years has been voluminously circularized by Dr Leach, urging them to attend his "Clinics." These "clinics" are given not only at Junction City, but apparently in various parts of the country from the middle west to the Pacific Coast. In the "come-on" material sent out by Dr Leach, he urges physicians, as a preliminary to taking the course, to purchase his stenographic notes, which are said to be a replica of his "educational lectures." These are sold for \$2.50. The course itself seems to have varied in price from \$100 to \$50. The thesis developed by Dr Leach is, first, that the nose is a filter which, when normal, stops and holds all dust, pollen, etc., that may be drawn in through the breath. When, however, the nasal tissues are in a "wasted condition," the dust and pollen are "allowed to filter through into the blood stream due to this defect in the filter." Let Dr Leach describe it.

In the upper third of the nose in all hay fever there exists a hyperabundance of the glandular tissue which is the absorbing tissue of the body. Filtration Method of treatment destroys this excess of the glandular tissue and in the healing process it is replaced by more of the connective tissue which tightens these membranes to the extent they become impervious to this pollen dust as in the normal nose. A scar tissue? No we do not carry the effort that far.

What Dr Leach calls his "Stenographic Notes" of his "Educational Lectures" is a forty-two page printed pamphlet entitled "Nasal and Air Passage Pathology." In the preface to his lectures Dr Leach declares that hay fever is "just another very distressing complication of catarrhal rhinitis." In his first lecture he states that the subject of hay fever "has been shrouded with more mystery than perhaps almost any subject we could have selected," but that he feels that he is "able to draw aside the veil that has shrouded this affliction with mystery and reveal it as one of the most simple pathological conditions with which we have to deal."

Of the efficacy of his "Filtration Method of Treatment" Dr Leach is quite convinced. He declares that "where the patient has been afflicted for ten years or less and we receive their complete cooperation, we can expect to get 100 per cent cures and most of them in the first season." With hay fever cases of more than ten years' standing, even with the complete cooperation of the patient, one will only get about 75 per cent of cures in either the first or the second season. However, many of them "receive a cure during the third or fourth year." The "treatment" which constitutes what Dr Leach calls his Filtration Method is essentially that of first swabbing the nasal tissues with a 2 per cent solution of cocaine and then the application of "Rhino-Form Single Strength." The nose and throat are then sprayed with an oil spray. After from one to three days' treatment of this kind, "Rhino-Form Double Strength" is used. If this brings about a "profuse bloody discharge," this is said to indicate a mere "sloughing away of all superfluous tissue and is in no way indicating harm being done to the membranes." In fact, Dr Leach says that "blood streaked discharge is a most favorable indication."

In cases of bronchitis and asthma, Dr Leach has what he calls a "local iodine treatment of the air passages" in which

a solution of iodine, tincture of belladonna, tincture of benzoin in alcohol is vaporized and the vapor inhaled by the patient. Should the physician be called when the patient is in the midst of a violent asthmatic attack, Dr Leach recommends the use of "Asthmolysin," a proprietary product that the exploiters claim contains "suprarenal and pituitary hormones." In other words, it is essentially epinephrine, although Dr Leach declares that "the effect of one subcutaneous injection [of Asthmolysin] will last longer than any of the common remedies, such as adrenalin, morphine and atropin." In those cases of asthma that are complicated by sleeplessness, Dr Leach recommends the prescribing of "Painodyne," a proprietary which THE JOURNAL has characterized as belonging to "irrational shot gun mixtures marketed with unwarranted claims."

The preparation used to destroy the excessive glandular tissue is "Rhino-Form." Just what Rhino-Form is, apparently no one but Dr Leach knows. In some of his mimeographed material he has vaguely and ambiguously described it as a "silver solution obtained by treating silver nitrate with an alkaline proteid." Because of inquiries received, Dr Leach was recently written to by the A M A Chemical Laboratory, inquiring whether Rhino-Form was or was not a secret formula, and asking, if it were not, whether Dr Leach cared to furnish an accurate definition of its composition, stating the amount of silver, ionic and non-ionic, as well as the amount of silver protein. This rather simple request, which could have been answered in a short paragraph, first brought a three and a-half page (single spaced) typewritten letter from Dr Leach, in which the Leach Clinics and the reasons for them were gone into in great minute. But no information was furnished on the subject of the Laboratory's inquiry!

Dr Leach did state that no effort had been made to commercialize Rhino-Form—this in spite of the fact that for some years both printed and mimeographed advertising material on Rhino-Form has been distributed to physicians. Nor, stated Dr Leach, had "a word or line" gone out "from the Clinics or from the Rhino-Form Company urging the profession to purchase Rhino-Form." Dr Leach then stated that he had found "high percentage of silver nitrate solutions" the most effective preparations for overcoming the "hyperabundance of glandular tissue," which, he holds, is the cause of absorptions of poisons which produce hay fever. He stated, however, that applying to the nasal mucosa silver nitrate solutions up to a strength of sixty grains to the ounce, the patients complained that the reaction was intolerable and worse than the disease—which seems reasonable—and there was always the possibility of sloughing and deep scarification. Therefore, continued Dr Leach.

Our next hope lay in the possibility of treating these very high percentage of Silver Nitrate solutions with the idea of materially modifying the powerful Nitrate Radical without destroying the potency of the silver. The result we named Rhino Form a Silver Nitrate high percentage solution not a formulae [sic] or combination of other agents but modified to the degree it will not slough unduly scarify, or injure normal healthy membranes yet of a germicidal power equal to the untreated solutions producing no reaction that could be complained of. Rhino Form is what we call a fool proof solution that will do no harm no difference how carelessly it may be used.

It is evident that this statement gives no more information of value on the composition of Rhino-Form than have the ambiguous pronouncements in the doctor's other advertising material. Dr Leach was again written to and asked whether his failure to furnish the information asked for was an inadvertent omission or whether it is a fact that the product is secret in composition. This brought the reply from Dr Leach that "in my former letters my statement given of the contents of Rhino-Form has been highly satisfactory to all men who have profited greatly through attendance at our Clinics." No further light was thrown on the composition of Rhino-Form although Dr Leach did extend his remarks in this letter to the extent of two full pages of single-spaced typewriting, emphasizing his sincerity of purpose and the unselfish contributions of his time to further the interests of the medical profession.

Rhino-Form is not put out under Dr Leach's name, but by the Rhino Form Company of Junction City, Kan. It appears, however, that the Rhino-Form Company is merely a trade style used by Dr E S Leach in the exploitation of his preparation. The A M A Chemical Laboratory recently analyzed Rhino-Form (Double Strength) and the chemists' report follows

LABORATORY REPORT

"One original specimen of 'Double Strength Rhino-Form' (Rhino-Form Company, Junction City, Kan.) was submitted to the A M A Chemical Laboratory for analysis at the request of the Bureau of Investigation. The container was an ordinary 2 oz bottle that carried a label on which was the following

A modified form of silver nitrate, robbing nitrate of some of its drastic action without destroying its potency.

Do not shake. Use of the clear solution.

The bottle contained 59 cc (2 fluidounces) of an odorless liquid-solid system out of which the solid would settle if the bottle was allowed to stand a short time. The solid was brown, the liquid without the solid, colorless, and the suspension partook of the brownish hue of the solid.

"Qualitative tests on the liquid indicated the presence of large quantities of silver and nitrate ions. The solid when treated with an excess of ammonia gave a yellow solution that gradually faded. Quantitative determinations were as follows

Specific gravity at 25 C.

1.062

Silver calculated to silver nitrate

7.1 per cent*

*The silver was determined by titrating a nitric acid solution of the original. It is questionable whether the insignificant amount of silver in the solid portion was measured by this reaction.

"From the foregoing, it is concluded that Double Strength Rhino-Form consists essentially of a 'neutral' solution of silver nitrate of approximately 7 per cent strength and a small amount of a silver-bearing solid, possibly a silver proteom compound and possibly some silver oxide. According to the label, the solid is not for therapeutic purposes."

Correspondence

NUTRITIONAL STATUS OF THE MINNEAPOLIS SCHOOL CHILD

To the Editor—The question of malnutrition, undernourishment, rickets and other evidences of food deficiency has been under constant observation in Minneapolis, with reference to the child of school age, for nearly two years.

In response to a questionnaire from the Surgeon General of the U S Public Health Service a report was made in March, 1932, following a survey made by sixty-four school nurses and eleven school physicians. The tribulation of this survey showed that the children attending the public schools of Minneapolis showed no increase in nutritional disturbances resulting from insufficient diet as compared with the previous two calendar years. A second survey was made in the school system through the agency of the school nurses in June, 1932. The result of this survey was similar to the one made in the early part of the year.

Reports from schools where public relief families predominate tend to show that such families showed no material tendency to malnutrition. The children from such families actually presented a better appearance as evidenced by laundry and clothing repair, than was customary.

The tribulation of the individual examinations of children, 32,000 conducted by the school physicians in the schools, during the school year September 10-2, to June 1933, shows that conditions indicating undernourishment had actually lessened as compared with the previous two school years. There was an actual reduction in the lack of general development and muscular tone, fewer defective tonsils and adenoids, less errors referable to the nervous system, a reduction of 50 per cent in poor posture, less indications of anemia and a lessened tendency to closed

A review of the report of the Oral Hygiene Department for the same school year shows 70 per cent of the mouths examined needing no dental repair or treatment as compared with 31 per cent the previous year and 27 per cent the year preceding.

All these figures indicate that Minneapolis children are not suffering from the effect of the economic change in home life. Pediatric wards of the Minneapolis General Hospital are unusually free from cases of malnutrition in young children. Rickets is almost unknown. There are and always have been cases of undernourishment in the child life of Minneapolis. The point at issue, however, is that this condition has not grown worse during the past three years of economic stress.

F E HARRINGTON, M D, Minneapolis
Commissioner of Health, Director of School Hygiene

THE WHITE BLOOD CELL COUNT

To the Editor—I was much interested in the editorial "The White Blood Cell Count" in THE JOURNAL, October 14. It interested me very much because, as many as thirty-two years ago, when I was a house officer at the Boston Children's Hospital, I made white counts (which were then coming into vogue) on every child who came into the hospital. I did this over a period of a few months. These children had pneumonia, appendicitis, congenital dislocation of the hips, bow legs, hare-lips, cleft palates, and various other acute and developmental defects. Apart from the acute conditions, the white count varied from 6,000 and 7,000 to 30,000, and at that time, the increased leukocytosis was interpreted as due to absorption from digestion, because many of the counts were taken within an hour or two after a meal, so, it was felt at that time, and still is, that there is a wide variation, in normal children, of the white cell count, and that in cases other than acute conditions, it should not be taken too seriously. On the other hand, there was at the hospital at that time as chief surgeon a man who many times came to a decision to operate, in cases of acute appendicitis, when the white count went up 200.

Therefore, I was interested in your editorial calling attention to the definite variation of the number of leukocytes under normal conditions, and without this knowledge, of course, no satisfactory judgment can be formed.

JAMES WARREN SIVER, M D, Boston

"THE STORY OF CHILDBIRTH"

To the Editor—The review of "The Story of Childbirth" in THE JOURNAL, November 4, says "The usual indefensible statement is made that the United States is the worst place in the civilized world for a woman to have a baby, and—unfairly—the statistics of various countries, which, all serious students of the situation decide, are not comparable are repeated again in an attempt to prove it."

I challenge the writer of the review to find any such statement in the text coming from the author. There is to be sure, a quotation from one of the most distinguished and accomplished obstetricians in the country that closely parallels the statement credited to me. What I did say (p 218) was

The indictment has been made and often repeated in the medical and lay press that the maternal mortality in the United States is the highest in the civilized world and moreover that the rate has not been lowered since 1915 and not appreciably lowered for a much longer period of time. The White House Conference is not willing to go on record as confirming this statement but it does submit undeniable evidence that the maternal and infant mortality in the United States ranks high among the civilized nations of the world.

This I believe is a fair statement of fact based on the most reliable statistics available in Washington at the time of writing. I am in full accord with the author of the review in re-enting the sensational writings in the lay and medical press when such writings overstress the facts. Our maternal mortality is relatively too high and we need the cooperation of the public in reducing it at least to the level of those nations such as Sweden that are making the best showing, and I have

faith that in another decade or two this will be accomplished I fully appreciate that there are mighty forces at work for the betterment of obstetric practice in America. Improved educational facilities in our medical schools and training schools for nurses, the establishing of more and better maternity centers, maternity hospitals, prenatal and postpartum clinics and the educational facilities afforded child-bearing women are all factors that will inevitably result in the betterment of obstetric practice in America. When this comes about the United States will rank with the nations that are making the best showing in maternal mortality.

PAIMER FINDLEY, M.D., Omaha

MENINGOCOCCIC MENINGITIS IN EARLY INFANCY

To the Editor—In THE JOURNAL, September 2, page 795 Dr. J. M. Ravid of New York refers to cases of meningitis in the new-born and in early infancy. We are aware of these case reports and of others in the literature on meningitis in very young infants. In our article in THE JOURNAL, July 22, page 272, we reported the occurrence of a case of meningococcic septicemia with meningitis in an infant aged 22 days, with a diagnosis correctly made within twenty-four hours of onset, immediate, adequate serum therapy given by the most desired routes, and early recovery. Later on in the article we mentioned that our patient was 'the youngest patient in whom the condition has been reported.' Possibly this statement is ambiguous, but since our case report referred to early diagnosis, serum treatment and rapid recovery, we feel that our patient is the youngest on record. Although others are reported we have been unable either in English or in foreign literature to find reference to any patient younger than 22 days with complete recovery. All other cases except one have been fatal. In the latter a hydrocephalus developed, and we have been unable to find any reference to the future course of this case. Hydrocephalus developing, naturally, cannot be termed rapid recovery. We might mention also that morphologic, cultural, agglutinating and typing tests proved the cerebrospinal fluid organism to be a meningococcus of types 1 or 3.

ALAN BROWN, M.D. (TOR),
NILES SILVERTHORPE, M.B. (TOR)

Toronto

EMERGENCY COMMITTEE IN AID OF DISPLACED FOREIGN PHYSICIANS

To the Editor—An unfortunate aspect of the present situation in Germany is that it has brought misfortune to many of her scholars. These include the physicians and surgeons in professional and in academic positions, who are being forced to leave the country and seem doomed to forfeit their carefully prepared careers and opportunity for carrying on research. To save their services for the common good, organizations in several countries of Europe are working to secure for them positions outside of Germany. A similar organization has been formed in this country, which will work in conjunction with those abroad. This committee is called the Emergency Committee in Aid of Displaced Foreign Physicians. Its form of organization and its methods are similar to those of the Emergency Committee in Aid of Displaced German Scholars, of which Dr. Livingston Farrand, president of Cornell University, is chairman. Its purpose is to facilitate the placement of a limited number of specially qualified foreign medical men in noncompetitive positions, so that they may continue to carry on their scientific work.

In view of the plight in which so many American physicians find themselves at present because of the economic depression the committee will not encourage immigration into the United

States of displaced foreign physicians for the purpose of engaging in medical practice. The committee will keep in mind the necessity of avoiding recommendations that might result in injury to American physicians or introduce competition with them. In instances in which a stipend may be provided through the agency of the committee, it will be stipulated that the position is for full time service. The committee will also maintain a central registry of refugee foreign physicians, including a record of their qualifications, from which institutions in this and other countries may obtain information concerning persons qualified for positions that cannot be filled locally.

The officers of the committee are Dr. Bernard Sachs, chairman, Dr. Edwin Beer, treasurer, and Dr. George Baehr, secretary. The executive committee includes Dr. Alexis Carrel, Dr. S. S. Goldwater, Dr. John A. Hartwell, Dr. Foster Kennedy, Dr. Emanuel Libman, Dr. William H. Park, Dr. David Riesman, Dr. J. Bentley Squier, Dr. I. S. Wechsler and Dr. Hugh H. Young.

All communications should be addressed to the Emergency Committee in Aid of Displaced Foreign Physicians, Room 1704, 2 West Forty-Fifth Street, New York City.

GEORGE BAEHR, M.D., Secretary

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

RUPTURE OF AMNIOTIC SAC DURING LABOR—DRY LABOR

To the Editor—I am somewhat at sea regarding certain obstetric dictums related both by professors and in textbooks. One is the subject of dry labor. Until recently most obstetricians taught that the premature rupture of the amniotic sac was unfortunate as it caused a longer labor with increased maternal and fetal morbidity and mortality. Now many excellent obstetricians assert that the amniotic sac is not a dilator and one of them rupture the sac before the advent of or during labor in order to shorten labor. I have always felt that the spontaneous rupture of the bag of waters frequently but not always preceded a malposition of the head or a noncephalic presentation. I should appreciate a clarification on this point. Kindly omit name.

M.D. New Jersey

ANSWER—As mentioned in the query, there has been a distinct reversal of opinion concerning the value of the bag of waters during labor. Until recent years nearly all obstetricians maintained that it was meddlesome and dangerous to rupture the membranes before the cervix was completely dilated, unless there was an excellent indication for carrying out this procedure. Today, even in such a conservative clinic as the Johns Hopkins labor is not infrequently begun by rupturing the membranes. Of course, this procedure should not become a routine one in all or in most cases of labor. In some clinics on the continent, however, nearly all patients have the bag of waters ruptured artificially early in labor but this type of intervention is to be strongly condemned. When induction of labor is necessary at, near or beyond term there is no more certain and safe method of doing this than by rupturing the membranes. However this is true only if the fetal head is engaged and the physician is scrupulously careful about asepsis and antisepsis. It is the unanimous opinion of all obstetricians who have had considerable experience with this procedure that labor is almost invariably shorter than in the cases in which labor is not started by rupturing the membranes or even when the membranes rupture spontaneously. There is apparently no harm to the mother or the baby if proper precautions are taken. However, unless there is an urgent reason, the procedure should not be carried out if the presenting part is floating, because of the risk of prolapse of the cord. It is possible for an unengaged head to change its position after artificial or spontaneous rupture of the bag of waters but if the head is engaged, and certainly if it is fixed in the pelvis, malposition of the head is a rarity.

Thus far the absence of the bag of waters during labor has not seemed to affect the new-born child. One of the chief arguments formerly presented for keeping the membranes intact

was that an intact bag of waters acted as the dilating wedge of the cervix and thereby spared the fetal head from excessive pressure against the cervical ring during each contraction. This argument, as far as we can tell is not valid. However, there is a possibility that absence of the membranes during labor may result in small hemorrhages in the baby's brain which are too small to produce symptoms and signs at birth or shortly afterward. It is possible that such tiny hemorrhages may produce disturbances later on, but thus far this has not been demonstrated. Another argument in favor of retaining intact membranes as long as possible was that the fetal head was not as smooth a dilator as the membranes and therefore it had a tendency to injure the cervix. However, postpartum examinations of the cervix fail to bear out this contention. The attitude at present, therefore, is that if an indication for inducing labor arises, and the fetal head is engaged there is no apparent harm in rupturing the membranes for this purpose.

BERCOVITZ PUPILLARY TEST FOR PREGNANCY

To the Editor—I have recently read an article on the so called Berco vitz pupillary test for pregnancy. The method described consisted in mixing 5 drops of the mother's blood with 1 drop of 10 per cent sodium citrate and dropping this in the eye of the mother. A positive reaction was supposed to consist of a change in the size of the pupil while the other pupil remained normal in size. This article also stated that the test was almost 100 per cent efficient in diagnosing pregnancy and that a negative reaction gave a true indication of the absence of pregnancy in approximately 75 per cent of the cases. Is this test considered reliable? Since the technique is so simple it seems that if the results should prove accurate it would be a more widely known and used test. Please omit name and address.

MD Illinois

ANSWER—The Bercovitz pupillary reaction to detect early pregnancy is not reliable enough to be dependable in doubtful cases of pregnancy. In a series of 107 cases of proved pregnancy reported by King (*Am J Obst & Gynec* 25:99 [Jan] 1933), a positive result was obtained in 68 per cent, a doubtful response in 10 per cent and a negative result in 21 per cent. In 108 tests on nonpregnant individuals there were 4 false positive responses and 11 doubtful reactions. In a series of 90 cases reported by Gordon and Emmer (*Am J Obst & Gynec* 21:723 [May] 1931) there were 64 per cent positive reactions, 14 per cent doubtful and 21 per cent definitely negative reactions. All the nonpregnant women in this series gave negative reactions.

One of the disadvantages of this test is that although the test is simple, there is difficulty in reading the result. A great deal depends on the interpretation of the observer.

It must be remembered that this test was not offered by Bercovitz as an absolute means of differential diagnosis between pregnancy and other uterine conditions. The information afforded by a positive reaction is confirmatory evidence along with that obtained by physical examination. In Bercovitz's first series he reported that the reaction was present in 80 per cent of the pregnancies studies in one group and in 62 per cent of the pregnancies in a smaller group.

TONIC THYROID WITH LOW BASAL METABOLIC RATE

To the Editor—Is it possible for an individual to be suffering from a toxic thyroid and still have a normal basal metabolism? A woman patient aged 37 married with two living children gave birth to a seven month lightly macerated still born infant about one year ago. During her last pregnancy she had a blood pressure of 210 systolic, 120 diastolic. Albumin was three plus. She weighed 140 pounds (72.6 kg.). She complained of headache, spots before the eyes and pain in the epigastrium. One month after delivery the pressure dropped to 130 systolic, 90 diastolic and the urine showed only a trace of albumin. Since then she has had a gradual loss of weight to 112 pounds (51 kg.). Menstruation has stopped. Her appetite is poor. She is nervous. The pulse rate ranges from 100 to 120. She vomits after meals. She has a choking sensation. She is troubled with hot flashes and perspires easily. Exanthematous eruptions appear on the chest, neck and face. There is a moderate exophthalmic expression of the eyes. The basal metabolism is plus 8. The white blood count is 9,000. There is no enlargement of the neck, no thyroid nodules are palpable and no thyroid enlargement is visible on roentgen examination. Although there is a history of tubercle in the family tuberculosis has been ruled out by roentgen examination. Other organic diseases have also been ruled out. The Warrington reaction is negative. Resulted in a carcinoma with high caloric feeding and iodine restriction gave no result. I would appreciate your suggestion. Kindly omit name.

MD Indiana

ANSWER—It is possible although unusual for a patient with a toxic thyroid to have a low or even a subnormal basal metabolic rate. This may be observed in hyperthyroidism a deranged iodine control in toxic exophthalmic goiter which has a low basal metabolic rate and a low basal metabolic rate.

Clinically but little difficulty is encountered in the interpretation of wide variations from accepted standards of the metabolic rate, however, the interpretation of lesser variations from the accepted normal, as frequently seen in chronic cardiovascular disease of thyroid origin, may present considerable difficulty and such variations must be interpreted individually. The normal for the individual may vary considerably from the average normal, and the variation in an individual case from a high to a low average normal, as may occasionally be induced by the administration of iodine in chronic low-grade hyperthyroidism may amount to as much as 25 per cent. This should particularly be taken into consideration in interpreting the metabolic rate of cardiac patients in whom the disease is conceivably due to thyroid intoxication. The cardiovascular phenomena frequently dominate the clinical manifestations of the latter group, whereas the usual clinical evidence of hyperthyroidism may be much less obvious. A drop of from 10 to 20 per cent in metabolic rate in a patient with heart disease while under iodine therapy may be taken as supporting but not demonstrating a diagnosis of thyrocardiac disease. Hypertension is frequently observed in chronic hyperthyroidism. Such patients present the usual manifestations associated with hypertension of whatever variety, and occasionally it may be difficult if not impossible to demonstrate a thyroid relationship.

In the instance cited, many of the conditions found suggest a chronic, low-grade hyperthyroidism. For the reasons stated, a single metabolic rate determination of ± 8 per cent should not be construed to exclude chronic, low-grade hyperthyroidism. While an unequivocal diagnosis of chronic hyperthyroidism cannot be made, this seems to be the most probable diagnosis. The fact that the thyroid is neither enlarged nor nodular does not preclude such a diagnosis. If such a diagnosis can be substantiated, thyroidectomy under iodine control in the hands of an expert surgeon trained in thyroid work would be proper treatment.

EPILEPSY

To the Editor—While a student in an engineering college fifteen years ago a man who was then 21 years old was taken with epileptic seizures. He had been in perfect health previously. The seizures came every few days and would come any time night or day. He was treated by rest and by bromides. He took 90 grains (6 Gm.) of sodium bromide daily without avail. He was studied by some of the best neurologists in the country who could not find the cause. Syphilis was definitely excluded. He went through the usual round of tonsillectomy, circumcision and so on without help. After eight months he was operated on in Cincinnati by a former president of the American Medical Association Dr. C. A. L. Reed who stated that the attacks were due to autointoxication from ptosis of the colon. This operation did no good. Later he was treated in Chicago by a physician who injected the patient's blood into rabbits and then injected the rabbit blood serum into the patient. These treatments helped as the periods between attacks became six weeks and the attacks came only at night usually in groups of five or six. No medicines were taken by mouth after the operation. After two years without medicine the patient was again put on bromides 60 grains (4 Gm.) daily and has had no attacks since. He returned to college was graduated and at present has a good position as an engineer. His work is quite strenuous because of long hours and the responsibility of his work. After he had been without attacks for two years he married and has three children, all apparently healthy. The amount of bromide was gradually cut down and at present he is taking 10 grains (0.65 Gm.) of bromide a day and 1 grain (0.065 Gm.) of phenobarbital a day. While he has had no major seizures for twelve years he does have particularly when tired occasional transient ringing of the ears lasting a few seconds. At such times his head may feel thick and he gets relief by going to bed for a few hours. This ringing in the ears was always the premonitory sign of his major attack. Please advise me as to the following: 1. Would it be safe to discontinue bromides entirely? 2. Is the use of 10 grains of bromide and 1 or 15 grains of phenobarbital daily likely to do harm to the brain, kidneys or other organs? To date they have not affected him. 3. Is it likely that his children will be epileptic? There is no other case of this disease in his family. 4. For the past few years the patient has used alcoholic drinks moderately. Is this likely to bring back the attacks? Please omit name.

MD Michigan

ANSWER—1. In view of the fact that the patient is apparently still having minor seizures it seems unwise to discontinue the remedies altogether. The bromide probably can be gradually eliminated without harm but the phenobarbital should be continued. It is well to remember that phenobarbital should never be discontinued suddenly in cases of epilepsy as there is a liability to the occurrence of a series of seizures.

2. Not in this case.

3. No definite answer can be given. In the absence of a family predisposition and especially if the mother's family history is without epilepsy it is quite likely that there will be no epilepsy in the children.

4. The occurrence of epileptic seizures is a positive contraindication to the use of alcohol.

PREVENTION AND TREATMENT OF RENAL CALCULI

To the Editor—A well developed though rather obese man aged 50 is subject to frequent attacks of renal colic and gout. The patient may for weeks have the daily passage of numerous small calculi in the urine. An analysis shows that these calculi are composed of practically pure uric acid. His blood chemistry is normal except for a very high uric acid content just under 7 mg to 100 cc. Roentgen examination reveals that the right kidney is normal but that there is a bifid kidney pelvis and bifurcation of the ureter and considerable enlargement of the left kidney. There is however, no evidence of damage. Treatment during attacks of gout has included sodium salicylate, colchicine salicylate, neocinchophen, intravenous injection of an ampule containing salicylate sodium iodide and colchicine, also cold wet dressings of saturated solution of magnesium sulphate locally, forced fluids, a purine free diet, and sedatives. Treatment during attacks of renal colic included the use of some urinary antiseptic, forced fluids, sedatives and hypnotics and the alkaloids of belladonna. Recently the patient has been taking piperazine with distilled water and a low purine and high vitamin diet. I should appreciate your advising me as to the following points: 1 Whether some forms of drinking water are harmful and predispose to the formation of urinary calculi and attacks of gout. In this district we have what is commonly known as 'Flatbush' water. 2 Whether it is advisable to subject my patient to cystoscopy and irrigation of his left kidney pelvis every few months to prevent accumulation of urinary stones. 3 As to the effect of diet. 4 As to proper medication for the prevention and treatment of the gouty attacks and the formation of calculi. Please omit name.

MD New York

ANSWER—1 While there are some urologists who maintain that distilled water should be used instead of ordinary tap water, in actual practice there is little harm that can be attributed to drinking the latter.

2 Cystoscopy and pelvic irrigation as a preventive measure may appear on the surface to be a reasonable form of treatment, but in practice it is both painful and unproductive of the described results. Small stones may pass eventually of their own accord, while large ones cannot pass spontaneously or with mechanical aid aside from surgery.

3 and 4 Diet has not been proved to have much effect in cases of renal calculus. The restriction of purine rich food and alcoholics is the generally accepted procedure in cases of gout. For the relief of the acute attack of gout, one of the colchicum preparations and external heat should be tried. If no relief is obtained, one of the narcotics will be necessary.

DIFFERENTIAL DIAGNOSIS OF CHRONIC SINUSITIS

To the Editor—I should like to have a diagnosis and suggestions for treatment for the following condition. Nine years ago the patient had an infection of the right sinus and two years later the left side became infected (the antrums). He became quite deaf with continuous tinnitus. Three years ago he had windows cut in both sides which are still open. They still drain but the thick pus has cleared. There is still considerable clear mucous discharge. Every six days he has a slight chill with a rise in temperature of from one fifth to two fifths degree with a marked increase of the head noise and an increase of the mucous discharge. There is a dry stuffy feeling of the nasal mucous membrane the first twenty four hours which soon fades into the increased discharge. The noise gradually subsides until the sixth day until almost lost and then the chill and fever appear again. He has had several cultures made but never has had a definite diagnosis or the germ isolated. All manner of treatment has been tried but to no avail. The deafness has improved since the windows were made. The general health is normal. The past history is negative except for the usual contagious diseases.

MD California

ANSWER—At first blush, it would appear that all the symptoms described were due to the chronic sinus condition. Nevertheless, closer consideration of a history in which one of the most outspoken features is a regularly recurrent chill accompanied by a slight rise in temperature makes one feel that this would be an unusual and rare effect of chronic sinusitis. Certainly every attempt should be made to rule out all other causes of chronic fever. Chief among these would be malaria especially if the patient lives in a malarial climate, undulant fever, tularemia, Hodgkin's disease, in which the fever known as the Pel-Ebstein type occasionally occurs, and also such conditions as perinephric and subdiaphragmatic abscesses, as well as pyelitis and pyelonephritis. In the absence of any of these, one could assume that the symptoms complained of were due to the disease in the sinuses. Careful roentgen examinations should be made. Iodized oil, particularly, could be instilled into the antrums, with subsequent roentgen examinations to determine the condition of the sinus mucosa. In the event that roentgenographic evidence supports the clinical condition found in the nose, and the diagnosis of chronic suppurative sinusitis is made, surgery of a more radical type than the patient has already had should be considered. As to the ear symptoms, any marked impairment of hearing, accompanied by head noises in an older man, is highly suggestive of auditory nerve involvement. The

increased difficulty in hearing that accompanies the flare up of the nasal condition is probably a superimposed tubal catarrh. If the nose improves, the latter condition should improve also. In any case, careful tests to determine the nature of the deafness should be undertaken, if only to get an accurate prognosis.

RECURRENT HERPES SIMPLEX

To the Editor—A farmer aged 26 has had fissures in the anterior third of his tongue for the past eighteen or twenty months. Vesicles appear over the sides and the anterior surface of the tongue followed by these fissures. The fissures are quite painful, especially when the patient eats. He drinks plenty of water. His tongue is not dry or rough. The blood urine and gastric analyses are normal. There are no rough edges on the teeth. His dentist checked up on his teeth. He has spent approximately four months with each of two eye, ear, nose and throat specialists. He has been to five or six other doctors and has been treated by me for over three months all to no avail. I have alkalinized him had him scrub his tongue with soap and toothbrush, follow with a boric acid and alcohol mouth wash and apply tincture of myrrh every other day. Although his tongue seems almost to clear up these new fissures break out again. Please omit name and address.

MD Wisconsin

ANSWER—Did the dental examination include roentgenograms of the teeth? If not, these should be made to detect any focal infection. The use of an alkaline wash to cleanse the mouth is all right, but this must be done gently, with no scrubbing. The patient should use magnesium magma morning and evening as a tooth wash, leaving it in the mouth after the evening cleansing. When the ulcers or fissures appear, each one should be touched with a 5 per cent solution of chromic acid or a crystal of silver nitrate. The diet should be bland, and the excessive use of fruit should be avoided. The old combination of equal parts of magnesium magma and compound mixture of rhubarb and soda internally, just enough to cause mild loosening of the bowels, may be useful. The diagnosis is recurrent herpes simplex.

SALT INTAKE AND GASTRIC ACIDITY

To the Editor—1 In cases of restricted sodium chloride intake the normal osmotic pressure is preserved by decreased renal excretion of salt. Is there also a decrease of gastric acidity? 2 Would a diet containing 2 Gm of table salt daily increase the gastric secretion of hydrochloric acid? 3 Would large doses of sodium bicarbonate decrease the chloride ion in the blood and decrease the gastric secretion of hydrochloric acid as a defense measure to maintain the normal acid base equilibrium and combat an impending or actual alkalosis? 4 I understand that experimental removal of the normal alkaline intestinal secretions causes an increased gastric acidity probably to combat an acidosis from loss of alkali. I have read that large doses of alkali stimulate increased secretion of hydrochloric acid but the reverse seems more reasonable on the basis of maintaining the normal acid base equilibrium. Has this question been settled by experiments or clinical data? Please omit name.

MD Chicago

ANSWER—1 and 2 No. These answers are based chiefly on experimental observations. Eimer (*Deutsche med Wchnschr* 56 997 [June 13] 1930) found that the acidity curve showed an upper trend even if a salt-free diet was continued for months. The human organism adjusts itself, he states, to the decreased chloride supply by limiting sodium chloride secretion in the urine so that neither tissues nor fluids show a deficiency.

3 Yes, but the doses must be large. The dosage of sodium bicarbonate must exceed 3 Gm. per kilogram in dogs (Boyd, *T E Am J Physiol* 71 455 [Jan] 1925).

4 This question is one difficult to answer. Experimentally a hypersecretion is noted lasting several days following the period of heavy alkali administration, but large doses reduce gastric secretion both in quantity and in acidity. Boyd's work indicated that calcium carbonate increased the flow of gastric juice. Clinical impressions of stimulation of gastric secretion by alkalis are not verified at this time.

ACETYLENE POISONING OR HYDROGEN ARSENIDE (ARSENINE)

To the Editor—Three patients have been admitted to the hospital within the past month with symptoms of acute catarrhal jaundice, enlarged liver, malaise, anorexia and a severe jaundice, one having an icteric index of as high as 130. Each of the patients has a history of having worked with acetylene torches in tanks or closed rooms. Is there any relationship between the inhalation of this gas or the products of this gas and the jaundice? If the gas is responsible, how does it produce the effect? What is the pathology? Should this type of case be treated as any other catarrhal jaundice or is there a specific?

B W PATTON MD Baltimore

ANSWER—Acetylene, as such, is of a low order of toxicity. Impurities and products of incomplete combustion are responsible for the abnormal states usually attributed to acetylene.

Both hydrogen phosphide (phosphine) and hydrogen arsenide (arsine) may exist in acetylene

The disease state described in the query is fairly characteristic of poisoning by hydrogen arsenide. In the typical case may be found vomiting, edema of the face and particularly about the eyes, coryza, lassitude, pain in the region of the liver, albuminuria, hemoglobinuria and jaundice

Assuming that these three patients, in fact, are suffering from occupational diseases, arsenic poisoning is probable. This may be proved by the establishment of arsenic in quantities above normal in the urine, blood or hair of the patients or in the acetylene gases (preferably of the same lot of gas) when burned in small enclosed spaces. When proved, obviously the treatment indicated is that appropriate for arsenic poisoning and its sequelae

TREATMENT OF LATE HEREDITARY SYPHILIS

To the Editor—A patient of mine at the age of 20 was taken ill and his sickness was diagnosed as heredosyphilis. His blood test at that time gave a 2+ Wassermann reaction and for this he was under treatment for two years during which period twenty-four injections of neoarsphenamine and about 400 of mercury compounds were made. He felt fairly well for the next two or three years when again he was taken ill and his blood examined and found again with a plus reaction. At that time he came to me and I have administered to him in four years forty-eight injections of neoarsphenamine and 200 of bismuth compounds. During the treatment he gained weight and was feeling better just from the first injections. Two weeks ago he came to me and told me that for about one year after the treatment he was feeling fine but that for the past two months he has been losing weight, appetite and sleep. I took a specimen of blood and sent it for examination which yielded a 2+ reaction. Another examination gave the same answer. Will you kindly tell me whether sulpharsphenamine or sodium thiosulphate injections should do better in cases like this or what do you advise for treatment? Kindly omit name

MD New York

ANSWER—Cases of late inherited syphilis in which the Wassermann reaction is persistently positive require a spinal fluid examination. Such symptoms as loss of weight, appetite and sleep may be due to a variety of causes. The treatment that this patient has had has been more than adequate. Sulpharsphenamine presents no advantages over neoarsphenamine except that it can be used intramuscularly. Sodium thiosulphate is not a spirocheticidal drug. Although a few observers have reported reversal of the Wassermann reaction following its use, its value in the treatment of syphilis is questionable. It should be reserved primarily for cases intolerant to the arsenicals and for the treatment of postarsphenamine accidents. This patient probably would do fairly well on milder treatment, iodides by mouth, mercury by injection, with occasional courses of bismuth arsphenamine sulphate. If the spinal fluid is positive intravenous injections of acetarsone might be tried

MENTAL DEPRESSION AFTER COITUS AND BILATERAL VASECTOMY

To the Editor—A man aged 40 married has had severe mental depression and insomnia often lasting for a week or more following each act of coitus or nocturnal emission no matter how infrequent those may be. Abstinence for several months has had no beneficial effect on him. He had masturbated considerably when a boy and has had premature ejaculations and nocturnal emissions for many years. He has never had a venereal disease. The only abnormality found on examination was a congested posterior urethra and verumontanum. Those have not improved greatly under local applications of silver nitrate solutions (10 to 20 per cent) or even fulguration. Sedatives had only a slight temporary influence. His prostatic and seminal fluids are normal. It is quite evident that loss of seminal fluid has a marked depressant effect on this patient. The man is highly intelligent and desires a bilateral vasectomy, assuming the consequences of a sterilization. Would such a procedure be of any benefit to the patient? What might be the remote effects of a double vasectomy on his (1) sexual power (2) mentality? Kindly omit name

MD Ohio

ANSWER—This is not an unusual case. The congestion in the prostatic urethra is certainly sufficient to account for all the symptoms. Abstinence or infrequent coitus can only make matters worse. The same may be said about applications of strong silver nitrate or fulguration to the congested prostatic urethra. The patient should not indulge in the practice of withdrawal but in regular normal sexual intercourse whenever sexually excited. The non-indulgence in coitus when sexually excited will only increase the local congestion. The local treatment should consist in gentle prostatic massage and instillations of weak silver nitrate solution is (from 1/3000 to 1/500) into the prostatic urethra with the Bland-Schmid syringe every three days

There is no remote effect of double vasectomy either on the sexual power or on the mentality except a possible local effect

UNUSUAL MENSTRUAL INTERVAL

To the Editor—I have a patient aged 19 years quite healthy with no obvious abnormality either by history or physical examination save that her menstrual periods have always occurred regularly every nineteen days and last five days. The patient is anxious because of this frequency and the attendant inconvenience. Is it advisable to attempt to lengthen the cycle and what means would you suggest? Kindly omit name

MD Ohio

ANSWER—While the increased frequency of menstruation is a great inconvenience, it does not indicate any pathologic condition. In the human female, with possible rare exceptions, menstruation always depends on preceding ovulation, and in the present state of knowledge no way is known of bringing about regular prolongations of the intervals between ovulations and therefore between menstrual periods. It not infrequently happens that, after a temporary amenorrhea produced by radium or roentgen rays, the menses that follow the period of amenorrhea more nearly approach the usual twenty-eight day cycle. However, since this patient is only 19 years old such treatment, even if it were more certain in its action than it is, would still be out of the question. It may be that after a pregnancy or later in life the menstrual intervals will change and thus is about the only encouragement that can be given the patient at the present time

DERMATITIS FROM CARBON PAPER

To the Editor—A man aged 53 weighing 235 pounds (106 Kg.) a railroad switchman has handled carbon paper for the last three years in making out his records and during this time he has had considerable eczema on his hands. This began on the right thumb and index finger. When I first saw him June 11, 1933 the eczema was of a callus-like nature and would crack, itch and annoy him. The condition still exists and is involving both hands in spots. He has never had eczema on any other part of his body. The eczema is evidently due to carbon paper. The patient also has a cousin who has eczema on her hands whenever she uses carbon paper. I should like to know whether any other cases of this nature have been reported and also the chemical ingredient of the paper that produces it

MD New York

ANSWER—Typewriter carbon paper, hectograph types of ink, and indelible pencil leads are fairly common sources of dermatitis. The callus formation mentioned in the query suggests mechanical rather than chemical irritation. Aniline dyes enter into the three products specified. Methyl violet is a widely used one. Skin sensitization is a possibility, and secondary entry of fungi often aggravates and perpetuates the initial chemical dermatitis

GONORRHEA IN A SIX YEAR OLD BOY

To the Editor—Please outline for me the treatment of uncomplicated gonorrheal urethritis in a healthy 6 year old boy. At present there is a copious discharge and slight burning on urination, edema of the prepuce and redness about the meatus have practically subsided under hygienic treatment. What is the prognosis for cure? Please omit name

MD New York

ANSWER—Gonorrheal urethritis in a boy of 6 years should clear up without any local treatment, as boys of this age generally are not subjected to the influences of either alcohol or sexual excitement, the two things surest to prevent proper curative response. It tends under such circumstances to be a self-limited disease and young boys generally recover promptly without serious complications if no traumatic treatments are given. Aside from local heat for edema, precautions regarding conjunctival infection and ordinary hygiene such a child needs little if any treatment and the prognosis for complete cure is little less than 100 per cent

SENILE ANGIOMA

To the Editor—I have a woman patient aged between 45 and 48 years who has a tremendous amount of small red elevated spots all over her body. It seems that they multiply gradually. She wants to get rid of some especially those on her arms, chest and upper part of her back. These spots are undoubtedly small hemangiomas. Would the application of the electric needle be of use in this case? Are there any ill after effects following the use of the needle? Kindly omit name

MD Connecticut

ANSWER—The correspondent is right in diagnosis and suggested treatment. The senile angioma is an innocent growth that seldom becomes large enough to be disfiguring. Electrolysis is good treatment for the growths and will do no harm either immediately or afterward. The needle should be pushed through the base of the growth and a moderate current applied for a few seconds, then a second application parallel to the first should be made until the whole base has been treated. Cruent punctures are said to favor scarring

TOXIC EFFECTS OF PLANT JUICES IN EYE

To the Editor—Recently I was consulted by a patient who had been gathering wild flowers a few hours before I saw her. As she broke one of the stalks, some of the sap of the flower spurted into her eye. She experienced severe burning in the eye at once. When I examined her a few hours later there was a mild ciliary inflammation, the epithelium of the cornea was faintly stippled and the pupil was unaltered in size and responded to normal stimuli. There was no disturbance of the interior of the eye. The next day the stippling of the epithelium was coarser but of less extent. Recovery has been uneventful. The patient was not able to tell me what kind of flower she had gathered. What substance would be encountered in the juice of the plant like this which would produce such severe pain and mild destruction of the epithelium? What would you offer for treatment other than sedatives, local anesthesia and protection of the eyeball? Please omit name.

M D Indiana

ANSWER—Since it is not known from what plant the sap emanated, it of course not possible to say what specific toxin was contained in the juice. However, the toxic effect of many plant juices on the eye is well known varying from mild conjunctival irritation to intense conjunctival edema, superficial or deep keratitis, and even iritis. For a discussion of this the reader is referred to the article on Injuries to the Eye by Wagenmann, on page 1594 of the Graefe-Saemisch handbook, second edition 1913 volume 9. The treatment described in the inquiry is eminently proper.

NO GLANDS FOR FEMALE CHARM

To the Editor—I have run into an interesting question in connection with some efforts to adjust a problem in domestic psychology. The layman reads a good deal of stuff nowadays and gets ahead of us folks some times. I wonder if any of your staff would have any suggestion to offer. All of my study has failed to stir up a clue. The problem is that of a husband who complains that his wife lacks femininity, that she is too wooden and matter of fact and he wants to know if there is some glandular treatment possible that will give her that feminine charm that made Cleopatra and Anon de l'Enfer famous. This is to be distinguished from sexual ardor which this patient does not lack. The problem seems to be rather the lack of that quality which is the opposite of he manness and of that quality which to my mind approaches the charm of children. Of course we classify it as a constitutional property whatever that means. But do we have any means of increasing it when it is deficient? Please omit name.

M D Nebraska

ANSWER—There is no glandular extract which could replace the inherited or acquired qualities of feminine charm. A grown woman who has not learned in girlhood to imitate some older woman with this secret or these manners is not likely to go to school to acquire them later in life. Still all things are possible to some women.

BLEEDING AFTER DEATH

To the Editor—In a court case the question has come up as to how long a man will bleed after death. In this instance the man was shot in the head with a shotgun the incident occurring during the summer months the man was then thrown from an automobile and when found there was a small pool of blood under the man. The question arose as to how long the man could have been riding dead but still bleeding.

M D Georgia

ANSWER—Active bleeding cannot continue after death because the heart has stopped. Blood still fluid may run out of torn vessels after death, if the conditions are favorable but for how long and to what extent cannot be stated because the conditions involved would vary greatly in different cases. In the case mentioned it says that there was a small pool of blood under the man. It may well be that this pool of blood was caused by the oozing of bloody serum or blood stained cerebrospinal fluid from the wounds in the head. In any case, if the man was dead when thrown out, the "pool of blood" was not due to actual hemorrhage. In cases of hemophilia oozing or bleeding may continue longer.

ECZEMA OF AUDITORY CANAL

To the Editor—I have a case of moist weeping eczema of the ear canal in a dentist. I have used 10 per cent silver nitrate have kept water out of it and also used 5 per cent menthol and liquid petrolatum. Since the treatment has not helped I should like to have you suggest one. The patient is in perfect health. At times when the feet become hot in summer small edematous patches appear on them. Please omit name.

M D Ohio

ANSWER—In cases of eczema of the external auditory canal when simple measures such as have already been applied do not give the desired result, it is sometimes desirable to consult a dermatologist. In some of these instances the application of x-rays in certain definite doses is beneficial. In some cases this condition may be an evidence of allergy and the tests for protein sensitization should be made.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA	Montgomery	Jan 9 13	Sec	Dr J N Baker	519 Dexter Ave
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY	Oral	New York	Dec 15 16	Sec	Dr C Guy Lane
AMERICAN BOARD OF OPHTHALMOLOGY	Cleveland	June 11	Sec	Dr William H Wilder	122 S Michigan Bldg
AMERICAN BOARD OF OTOLARYNGOLOGY	Cleveland	June 11	Sec	Dr W P Wherry	1500 Medical Arts Bldg
ARIZONA	Phoenix	Jan 23	Sec	Dr J H Patterson	320 Security Bldg
COLORADO	Denver	Jan 2	Sec	Dr Wm Whitridge Williams	422 State Office Bldg
DELAWARE	Wilmington	Dec 12 14	Sec	Dr Harold L Springer	1013 Washington St
DISTRICT OF COLUMBIA	Washington	Jan 8 9	Sec	Dr W C Fowler	203 District Bldg
HAWAII	Honolulu	Jan 8 11	Sec	Dr James A Morgan	48 Young Bldg
KANSAS	Topeka	Dec 12 13	Sec	Dr C H Ewing	Larned
MARYLAND	Baltimore	Dec 12 15	Sec	Dr Henry M Fitzhugh	1211 Cathedral St
MASSACHUSETTS	Boston	Dec 13 14	Sec	Dr John A Evans	612 W 40th St
MINNESOTA	Minneapolis	Jan 23	Sec	Dr J Charney McKinley	126 Millard Hall
MISSOURI	St Paul	Jan 16 18	Sec	Dr E J Engberg	350 St Peter St
NATIONAL BOARD OF MEDICAL EXAMINERS	The examinations will be held at centers in the United States where there are five or more candidates	Feb 14 16	Ex	Sec	Mr Everett S Elwood
NORTH DAKOTA	Grand Forks	Jan 2	Sec	Dr G M Williamson	414 S 3rd St
OREGON	Portland	Jan 24	Sec	Dr Joseph F Wood	509 Selling Bldg
PENNSYLVANIA	Philadelphia	Jan 26	Sec	Mr W M Demion	400 Education Bldg
RHODE ISLAND	Providence	Jan 4 5	Dir	Dr Lester A Round	319 State Office Bldg
SOUTH DAKOTA	Pierre	Jan 16 17	Dir	Dr Park B Jenkins	Pierre
TENNESSEE	Memphis	Dec 21 22	Sec	Dr H W Qualls	130 Madison Ave
WASHINGTON	Seattle	Jan 11 12	Regular	Seattle	Jan 15 16
WISCONSIN	Milwaukee	Dec 16	Sec	Prof Robert A Bauer	3414 W Wisconsin Ave
	Madison	Jan 9 11	Sec	Dr Robert E Flynn	401 Main St

Hawaii July Report

Dr James A Morgan secretary, Board of Medical Examiners, reports the oral and written examination held in Honolulu July 10-13, 1933. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. One physician was licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1933)	85.6	87.7
Rush Medical College	(1933)		81
St Louis University School of Medicine	(1932)		80.6
College	LICENSED BY ENDORSEMENT	Year Grad	Per Cent
Washington University School of Medicine	(1931)	N B M Ex	
* License withheld pending presentation of M D degree			

Iowa June Examination

Mr H W Grefe, director Division of Examinations and Licenses, reports the written examination held by the Iowa State Board of Medical Examiners, June 6 8, 1933. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and two candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1933)	85.1	
Rush Medical College	(1933)	85.6	
School of Medicine of the Division of the Biological Sciences	(1933)*	87.4	
State University of Iowa College of Medicine	(1933)†	78.9	
80.4	80.9	81.5	81.9
82.6	82.8	82.9	83.1
83.3	83.4	83.5	83.8
84.3	85	85	85.3
85.4	85.4	85.5	85.5
85.5	85.5	85.5	85.6
85.8	85.8	85.8	85.9
86	86	86	86.1
86.3	86.4	86.5	86.5
86.5	86.5	86.5	86.6
86.6	86.6	86.6	86.9
86.9	86.9	86.9	87.1
87.1	87.1	87.1	87.1
87.3	87.3	87.3	87.3
87.4	87.4	87.4	87.4
87.5	87.5	87.5	87.5
87.6	87.6	87.6	87.6
87.8	87.8	87.8	87.8
88	88	88	88.1
88.1	88.1	88.1	88.1
88.3	88.3	88.3	88.3
88.4	88.4	88.4	88.4
88.5	88.5	88.5	88.5
88.8	88.8	88.8	88.8
88.9	88.9	88.9	88.9
89	89	89	89.1
89.1	89.1	89.1	89.1
89.2	89.2	89.2	89.2
89.3	89.3	89.3	89.3
89.4	89.4	89.4	89.4
89.5	89.5	89.5	89.5
89.6	89.6	89.6	89.6
89.7	89.7	89.7	89.7
89.8	89.8	89.8	89.8
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90	90	90	90.1
90.1	90.1	90.1	90.1
90.2	90.2	90.2	90.2
90.3	90.3	90.3	90.3
90.4	90.4	90.4	90.4
90.5	90.5	90.5	90.5
90.6	90.6	90.6	90.6
90.7	90.7	90.7	90.7
90.8	90.8	90.8	90.8
90.9	90.9	90.9	90.9
91	91	91	91.1
91.1	91.1	91.1	91.1
91.2	91.2	91.2	91.2
91.3	91.3	91.3	91.3
91.4	91.4	91.4	91.4
91.5	91.5	91.5	91.5
91.6	91.6	91.6	91.6
91.7	91.7	91.7	91.7
91.8	91.8	91.8	91.8
91.9	91.9	91.9	91.9
92	92	92	92.1
92.1	92.1	92.1	92.1
92.2	92.2	92.2	92.2
92.3	92.3	92.3	92.3
92.4	92.4	92.4	92.4
92.5	92.5	92.5	92.5
92.6	92.6	92.6	92.6
92.7	92.7	92.7	92.7
92.8	92.8	92.8	92.8
92.9	92.9	92.9	92.9
93	93	93	93.1
93.1	93.1	93.1	93.1
93.2	93.2	93.2	93.2
93.3	93.3	93.3	93.3
93.4	93.4	93.4	93.4
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93.6	93.6	93.6	93.6
93.7	93.7	93.7	93.7
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94	94	94	94.1
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94.2	94.2	94.2	94.2
94.3	94.3	94.3	94.3
94.4	94.4	94.4	94.4
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94.6	94.6	94.6	94.6
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94.8	94.8	94.8	94.8
94.9	94.9	94.9	94.9
95	95	95	95.1
95.1	95.1	95.1	95.1
95.2	95.2	95.2	95.2
95.3	95.3	95.3	95.3
95.4	95.4	95.4	95.4
95.5	95.5	95.5	95.5
95.6	95.6	95.6	95.6
95.7	95.7	95.7	95.7
95.8	95.8	95.8	95.8
95.9	95.9	95.9	95.9
96	96	96	96.1
96.1	96.1	96.1	96.1
96.2	96.2	96.2	96.2
96.3	96.3	96.3	96.3
96.4	96.4	96.4	96.4
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96.6	96.6	96.6	96.6
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97.1	97.1	97.1	97.1
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97.3	97.3	97.3	97.3
97.4	97.4	97.4	97.4
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97.6	97.6	97.6	97.6
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98	98	98	98.1
98.1	98.1	98.1	98.1
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98.8	98.8	98.8	98.8
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99.3	99.3	99.3	99.3
99.4	99.4	99.4	99.4
99.5	99.5	99.5	99.5
99.6	99.6	99.6	99.6
99.7	99.7	99.7	99.7
99.8	99.8	99.8	99.8
99.9	99.9	99.9	99.9
100	100	100	100.1
100.1	100.1	100.1	100.1
100.2	100.2	100.2	100.2
100.3	100.3	100.3	100.3
100.4	100.4	100.4	100.4
100.5	100.5	100.5	100.5
100.6	100.6	100.6	100.6
100.7	100.7	100.7	100.7
100.8	100.8	100.8	100.8
100.9	100.9	100.9	100.9

University of Kansas School of Medicine	(1931)	83 1
Craigton University School of Medicine	(1931)	84 6
(1933)† 84 1 86 89 6		
University of Nebraska College of Medicine	(1931)	86 3
Queen's University Faculty of Medicine	(1927)	80 3
University of Toronto Faculty of Medicine	(1929)	90 8

Nine physicians were licensed by reciprocity and one by endorsement during September. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Hahnemann Medical College and Hospital	Chicago	(1908)	S Dakota
Loyola University School of Medicine		(1933)	Illinois
Northwestern University Medical School		(1910)	S Dakota
Rush Medical College		(1933)	Illinois
University of Illinois College of Medicine		(1933 2)	Illinois
St. Louis University School of Medicine		(1931)	Missouri
Craigton University School of Medicine		(1932)	Nebraska
Marquette University School of Medicine		(1932)	Wisconsin

College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Harvard University Medical School		(1931)	N B M Ex

* This applicant has received a four-year certificate and will receive an M.D. degree and Iowa license on completion of internship.

† The licenses of these applicants are being withheld pending completion of internship.

Ohio Reciprocity and Endorsement Report

Dr H M Platter secretary, Ohio State Medical Board reports 14 physicians licensed by reciprocity and 2 physicians licensed by endorsement Oct 3, 1933. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine		(1925)	Colorado
Howard University College of Medicine	(1925)	(1932)	Maryland
Rush Medical College		(1902)	Alaska
Johns Hopkins University School of Medicine		(1922)	Maryland
College of Physicians and Surgeons		(1919)	W Virginia
University of Michigan Medical School	(1930)	(1932)	Michigan
Washington University School of Medicine		(1931)	Missouri
Cornell University Medical College		(1918)	New York
Jefferson Medical College of Philadelphia		(1929)	Penna
McHerry Medical College		(1926 2)	Tennessee
Queen's University Faculty of Medicine		(1929)	New York

College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine		(1932)	N B M Ex
Harvard University Medical School		(1929)	N B M Ex

Wisconsin Reciprocity Report

Dr Robert E Flynn secretary Wisconsin State Board of Medical Examiners reports the special reciprocity meeting held in Milwaukee Sept 15 1933. Fourteen candidates were licensed. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Yale University School of Medicine		(1929)	New York
Emory University School of Medicine		(1931)	Georgia
Rush Medical College	(1929)	(1931)	Illinois
University of Illinois College of Medicine		(1930)	Minnesota
State University of Iowa College of Medicine		(1925)	Iowa
Johns Hopkins University School of Medicine		(1926)	Michigan
Harvard University Medical School		(1931)	Maine
University of Michigan Medical School		(1929)	Michigan
Washington University School of Medicine		(1931)	Missouri
University of Nebraska College of Medicine		(1929)	N Dakota
Marquette University School of Medicine		(1929)	Colorado
Osteopathy			Missouri

Licensed to practice osteopathy and surgery

Colorado October Report

Dr William Whitridge Williams secretary Colorado State Board of Medical Examiners reports the written examination held in Denver Oct 3 1933. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined both of whom passed. Five physicians were licensed by endorsement. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Temple University School of Medicine		(1931)	Cent
Tartu University School of Medicine		(1931)	50
University of Toronto Faculty of Medicine		(1929)	76
College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Michigan Medical School		(1931)	Michigan
University of Illinois College of Medicine		(1931)	Illinois
University of Nebraska College of Medicine		(1929)	N Dakota
Marquette University School of Medicine		(1929)	Colorado

Book Notices

Migraine: Diagnosis and Treatment By Ray M Balyeat M A M D, F.A.C.P. Associate Professor of Medicine and Lecturer on Diseases Due to Allergy University of Oklahoma Medical School. Cloth Price \$3 Pp 242 with 26 illustrations Philadelphia & London J B Lippincott Company 1933

The author bases his observations on about 350 cases seen during the last four years in which a diagnosis of migraine was made, he reports sixty-five cases in detail as typical of headache due to allergy. He emphasizes that "migraine refers to paroxysmal attacks of hemicrania (occasionally bilateral headache) associated with sensory and motor disturbances," the latter indicating disturbance of the cerebral cortex. He also points out that headaches without cortical symptoms may also be allergic or may be nonallergic, neither of these belongs in the migraine group. Typical migraine he regards as allergic, stress and strain are to be considered secondary factors just as change of weather must be considered a secondary factor in initiating an attack of bronchial asthma. The chapters on the history, heredity and physiopathologic mechanism of migraine are excellent. Emphasis is laid, with good reason, on the theory that symptoms are due to localized edema in the pia or cortex of the brain or in both, thus explaining the multiple and temporary symptoms of cortical irritation. The edema is probably due to increased capillary permeability in these localized areas and this, in turn, to hypersensitivity (allergy) to one or more foods. In other words, the mechanism of the edema of the brain is probably similar to that which is believed to occur in urticaria, hay fever, bronchial asthma and the other allergic diseases.

Issue can be taken with the author on the following points: 1 His description of migraine in children is vague and leads to doubt as to the correct diagnosis, fever and vomiting, without headache, are the symptoms reported. Even the fact that later on in life typical migraine occurs in these individuals does not prove at all that the childhood attacks were true migraine. In the absence of headache there would seem to be no basis for diagnosing migraine. Patients such as these probably account for the high percentage of cases in children quoted by the author, who states that 2 per cent of all children have migraine before the age of 10. This figure seems high in the experience of other men who have studied migraine. 2 The author contradicts himself on the results of his skin tests, on one page he obtains only 10 per cent negative tests, on another 30 per cent. In any case other men who have made skin tests of patients with migraine have not been able to obtain anywhere near such a high percentage of positive skin tests. 3 His results of treatment, as quoted are also better than those obtained by most other allergists. The figures given are excellent (from 80 to 100 per cent of relief), 30 per cent good (from 60 to 80 per cent of relief), 30 per cent fair (from 40 to 60 per cent of relief), 20 per cent, poor 20 per cent.

The author brings out quite correctly that skin tests must be supplemented by clinical study and that cyclic vomiting in infancy and early childhood may be and often is the forerunner of migraine or other allergic diseases. The book is well worth the attention of all interested in migraine and correctly points out that the treatment from the allergic point of view offers more to the patient than any other method so far discovered.

A Treatise on Materia Medica and Therapeutics Including Pharmacy Dispensing Pharmacology and Administration of Drugs By the late Balchandra Chosh. Thirteenth edition by Birendra Nath Ghosh F.R.F.I. & S. Prof. of Pharmacology Carmichael Medical College Calcutta. Price Rs 7/8 12x6d 1p 12 Calcutta Hilton & Company 1931

This edition has been brought up to the revision of the British Pharmacopoeia of 1932 and has assumed to a considerable extent the characteristics of British and American books on the subject. Nevertheless it shows local color as it contains tables of Indian domestic weights and measures. It reflects local experience in India as one can see from such treatments as The usual dose of sodium aurothiosulphate (arsurosin) for Indian patients is smaller and the initial course should be as follows viz 0.1 0.2 Gm etc. In India azar

urea stibamine is especially recommended as giving the quickest results and being perhaps the best preparation. Interesting is part VIII, on "Indian Indigenous Drugs," in which some of the more important and more commonly used drugs of India are discussed. Thus one finds adhatoda, which by virtue of an alkaloid, "vasicine," relaxes bronchial muscles in the treatment of asthma, boerhaavia, the alkaloid of which, "punarnavine," acts as a diuretic in the treatment of dropsy, berberis, the alkaloid of which, "berberine," has been used successfully in the treatment of leishmaniasis, and kurchi, the alkaloid of which, "kurchicine," has a specific action on *Endamoeba histolytica* and is also of value in bacillary dysentery. Apparently, India still has some remedies that Western medicine might do well to investigate.

Blood Pictures. An Introduction to Clinical Hematology. By Cecil Price Jones, M.B. Third edition. Cloth. Price \$2.10. 1 p. 71 with 12 illustrations. Baltimore: William Wood & Company, 1933.

There has been a distinct advance in hematologic information since the previous edition of this book twelve years ago. It was originally published to satisfy the need of the students and workers in clinical laboratories who desired such information and as a guide for clinicians in the interpretation of reports on blood examinations. Accordingly, clinical descriptions and treatment were for the most part omitted. The book is not intended for and is not a complete hematologic textbook. The author has purposely omitted the theoretical aspect of hematology. But the advisability of such a step is questioned. If the book were an atlas on blood pictures, such an omission would be understandable, but it does not seem plausible to present a guide for interpretation of blood without touching on some of the theoretical considerations. The plates of the blood cells are not well done. They are lacking in sufficient nuclear and cytoplasmic detail so necessary for successful recognition of the various types of cells. The illustrations do not seem to be sufficient for a work of this type. The book is divided into two parts. In the first part there are concise discussions on the technique of blood examinations and on the blood cells and the normal blood picture. The author's discussion of the normal blood appearances in infancy is totally inadequate. This is a serious omission, since they are totally different in this period of life from what they are in later childhood and adult life. The second part of the book is devoted to a discussion of blood pictures in the diagnoses of disease. There is doubtful virtue in the author's separation of bacterial infections into separate chapters on coccal, bacterial and protozoal etiology. In his introduction he states that the leukoid type of blood is associated with bacillary and lymphoid plus mononuclear type with protozoal infection. He modifies this by stating that other factors must be given consideration and then proceeds to discuss the response to bacterial infection without giving due stress to the modifying factors. Other chapters include discussions on blood diseases, the blood picture of malignant disease and hemocytometry. While the work is concise and presents many facts of interest, it is doubtful whether it will meet the needs of many students or physicians interested in hematology, even apart from its clinical applications.

Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician in Charge of Department of Clinical Research, University College Hospital, London. Seventh edition. Cloth. Price 6/6. Pp. 127 with 55 illustrations. London: Shaw & Sons Ltd, 1933.

This will be welcomed by students. Its authoritativeness and frequent editions have given this small handbook the distinction and dignity of a classic, reminding one of the frequent editions of Osler. The present edition compares well with its predecessors, containing even more keenly analytic clinical observations, evidence perhaps of a broadening and deepening of the author's bedside experience. In the preface one finds the statement that emphasis on the bedside recognition of cardiac irregularities, without graphic records, is a main objective. The book consists of eight chapters, each chapter, following the first, which is on the identification of disorders of the heart beat, discussing the most important seven forms of cardiac disorders, under the headings of sinus arrhythmia, heart block, premature contractions or extrasystoles, simple paroxysmal

tachycardia, auricular flutter, auricular fibrillation, and alternation of the heart. Each chapter follows more or less a similar grouping of topics: definition, nature of cardiac disorders, etiologic and pathologic relations, recognition, symptomatology, prognosis, treatment. Throughout, one is impressed by the simplicity, clarity and beauty of the text, as well as the continuous emphasis on the value of clinical data obtained at the patient's bedside. A number of minor criticisms are noted: the omission of the use of ephedrine in the treatment of heart block (p. 40), failure to mention the association of paroxysmal tachycardia with coronary thrombosis, nodal tachycardia, the difference in gravity and prognosis between auricular and ventricular paroxysmal tachycardia. As evidence of the beauty and dramatic quality of certain portions of the text, the following passage, from the section on prognosis of alternation of the heart, may be quoted: "Alternation of the pulse belongs to a small group of phenomena witnessed by those who attend the sick which treated as isolated signals, are in themselves emphatic and portentous. It ranks with subsultus tendimus with optic neuritis, with the risus sardonicus and other ill omened messengers. It is the faint cry of an anguished and fast failing muscle, which, when it comes, all should strain to hear, for it is not long repeated. A few months, a few years at most and the end comes."

The History and Epidemiology of Syphilis. By Wm. Allen Pusey, M.D., LL.D., The Gehrman Lectures, University of Illinois. M.D.C.C.C.XXIII. Cloth. Price \$2. Pp. 113 with illustrations. Springfield, C. Baltimore: Charles C. Thomas, 1933.

This small but important book consists of three chapters of equal length, owing to the fact that it consists of three lectures given by the author under the Adolph Gehrman fund. The first lecture, on the beginning of syphilis, takes up the old argument as to the place of origin of the disease as considered from the European point of view. So convincing, apparently incontrovertible, is the evidence presented by Dr. Pusey that the old argument seems to be settled. Syphilis was imported into Europe from the West Indies by the members of Columbus's first expedition. It is an intensely interesting story. The quotation from the writing of Dias de Isla, a noted physician contemporary to Columbus, stating that "this serpentine disease" afflicting the sailors of Columbus was entirely unfamiliar to him and his colleagues, is a high point in this part of the story. A number of the oldest illustrations of syphilis are reproduced for this chapter. The second part on the development of knowledge concerning syphilis, is the story of the clinical study of the disease during the next 300 years. The author resents the insinuation that the men of medicine were slow to understand the facts of the disease and affirms his opinion that in view of the means at hand, they did a wonderfully good job. One is too apt to judge them without realizing the limitation of their basic knowledge and scientific appliances. Brief mention is made of the physicians prominent in this clinical study and of the particular service rendered by each one. Portraits of many of them are reproduced, and several pictures illustrate the early methods of treatment. Following this comes the story of the dramatic developments during the last century, the discoveries made possible by the aid of modern science. Prominent figures in this development are represented by portraits. The third chapter, on the epidemiology of syphilis, is equally interesting and instructive. Dr. Pusey agrees that 5 per cent of the whole population is a fair estimate of the prevalence of the disease in Great Britain and the United States and quotes Farran's estimate that about 871,000 new cases occur each year in this country. The various methods of combating syphilis and the measure of their success are discussed. The author's optimistic attitude on this point is shown by his belief that, when the adoption of personal prophylaxis and the reduction of contagiousness by treatment become general, medicine can claim to have furnished means for the control in great part of the ravages of this hideous scourge of modern man. While not belittling the moral view of the question of prophylaxis, he emphasizes the overwhelming importance of physicians being governed by the medical needs of the situation. The clear, simple and concise style of the author is well known and nowhere more evident than in this book which is beautifully

printed and should be read by every physician and by every layman wise enough to be interested in this most important disease

The Thyroid Gland Its Chemistry and Physiology By Charles Robert Harrington M.A. Ph.D. F.R.S. Professor of Pathological Chemistry in the University of London. Cloth Price \$1.00 Pp 222 with 28 illustrations London Oxford University Press 1933

This is an authoritative presentation of the known facts and a discussion of the theories of the chemistry of the thyroid gland in relation to the physiology and pathology of the gland itself as well as to the general chemistry of the body. Probably nowhere in medical literature is to be found such a compact, simple and understandable presentation of the subject as is to be found in this monograph. Professor Harrington precedes the discussion of each phase of the subject by a historical sketch leading up to the present conception of the activity of the thyroid gland in both health and disease, and there is appended a valuable bibliography of important historical material since ancient times. The chapters dealing with the chemistry of thyroxine and its derivatives should be of interest to clinicians, since this highly technical subject is presented in as simple a manner as possible, as can be done only by a master of his subject. On the other hand, the chapters dealing with the more clinical phases of the subject also prove of interest to clinicians as representing a discussion of the subject from the chemical point of view. It is safe to say that all interested in the problems presented by the thyroid gland in both health and disease should be familiar with the material contained in this scholarly monograph.

Life Giving Light. By Charles Sheard Ph.D. Sc.D. Professor and Director of Biophysical Research the Mayo Foundation University of Minnesota and the Mayo Clinic. A Century of Progress Series. Cloth Price \$1. Pp 174 with 24 illustrations. Baltimore Williams & Wilkins Company in Cooperation with the Century of Progress Exposition 1933

In this volume the relationship of light to life is considered in a coordinated series of essays written in a delightfully conversational style. Not only the biologic and physiologic reaction to light of animal tissues and plant substance are dealt with, but also the physics of light, nonmathematically. Things scientific are explained in terms that should be understandable to an interested and inquiring layman. Being one of A Century of Progress Series, it is probably not intended as a textbook but it might well be recommended as parallel reading for the beginning student of biophysics. The contents deal with the history of artificial illumination, elements of the light spectrum measurements of light energy, lens, storing of light energy in plant and animal life, meaning of vitamins and, finally, a short, fanciful discussion on the mysteries of life.

La angina de pecho. Por Dr. Gregorio N. Martínez profesor de clínica médica de la Facultad de Córdoba. Cloth Pp 280 with illustrations Buenos Aires Humberto Andreotta 1933

This excellent monograph is based on a painstaking study and analysis of the more important writings contained in the enormous literature of angina pectoris, as well as on personal investigation and clinical experience. After a few introductory paragraphs there are chapters on the historical aspects of the subject, clinical types, symptomatology, etiology, pathogenesis, prognosis and treatment. About forty pages is given to each of the topics symptomatology, pathogenesis and treatment. The volume concludes with about seventy pages devoted to the clinical histories and discussion of nearly fifty cases. The work is particularly suited to the special student of heart disease. The undergraduate or the general practitioner looking for guidance in the essentials of practice would not be interested in and might be bewildered by the somewhat lengthy consideration of various theories and the frequent citation of authorities with whose italicized names some of the pages fairly bristle. Most of the many illustrations are well executed and helpful electrocardiograms. In general the author's views are the commonly accepted ones that would be called sound. Some might not fully agree with his statement in his introductory chapter that the paroxysms of angina pectoris are in the majority of cases accompanied by histologic and chemical change in the blood, sclerotic manifestations in the arteries and characteristic alterations of the electrocardiogram. It is

to be noted however, that under the caption of angina he is including those cases in which there is coronary thrombosis. Martínez is an adherent of the coronary artery theory of angina pectoris, as will be seen from the following quotation: 'As anatomic-pathologic substratum of this affection one must really accept a histochemical change in the coronary arteries and a special sensitiveness of the plexuses of nerves that accompany them' (p. 7).

Actinotherapy Technique. An Outline of Indications and Methods for the Use of Modern Light Therapy. With a foreword by Sir Henry Gauvain M.D. M.Chir. F.R.C.S. Fabrikhold Price \$1. Pp 184. Slough England Sollitt Publishing Company 1933

Since the introduction of this book is signed "Hanovia" it can be regarded as a publication edited by the manufacturer of Hanovia Ultraviolet Lamps. The book is divided into three parts. Part I contains five chapters, one a good but short chapter of physical data on mercury vapor lamps, another a mediocre discussion on physiologic effects, two mediocre chapters on ultraviolet dosage, and a short chapter on luminous heat and infra-red rays. Part II contains indications and details of technic, and part III is a supplementary list of books and papers. Of the 920 references given, a large portion refer to reliable research, while others are of doubtful value. More than half the book is devoted to indications and technic. Between abscesses and xanthoma there are more than 200 indications given for the use of ultraviolet radiation. Many of the indications and statements are not accepted by the medical profession generally. For example, one finds statements, such as "Chorea. Irradiation rapidly mitigates symptoms and relieves insomnia," "Diabetes. Good results are obtained in cases of glycosuria," "Goitre and Exophthalmic Goitre. In early cases benefit frequently follows on the use of actinotherapy," "Osteomyelitis. American writers report complete healing of the sinus after a few local treatments, combined with a Tonic Course of general irradiation." Such statements and others like them identify this book as of little value to the general practitioner seeking scientific information regarding the practice of ultraviolet therapy.

Red Blood Cell Diameters. By Cecil Price Jones M.D. Cloth Price \$3.50. Pp 82 with 44 illustrations. New York & London Oxford University Press 1933

Much of the recent progress in the study of anemia and grouping for therapeutic purposes has followed advances in the scientific development of hemocytometry. The data obtained by measuring the red cell diameter in certain types of anemia are now used for diagnosis and in following the course of therapy. The author has been one of the most active contributors in this field and is particularly well qualified to present the subject. He has given a concise and scholarly summary. The introduction is concerned with a historical review of the scientific study of the erythrocyte and its measurement. The technic of hemocytometry is fully described and the normal, physiologic variations and pathologic significance are clearly indicated. The work is an excellent summary of mathematically controlled observations in normal and anemic subjects, which combines not only the work of the author but other workers in the field as well. It is highly recommended as an authoritative source of information on hemocytometry and some of its clinical applications.

Handbuch der Inneren Sekretion. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. Band II. Lieferung 10. Die Physiologie des Hodens. Von Prof. Dr. Knud Sand. Laper Price 43.50 marks Pp 2017 2300 with 110 illustrations. Leipzig Curt Kabitzsch 1933

This section is written by Prof. Knud Sand of Copenhagen and constitutes in reality a monograph on the physiology of the testis. Professor Sand has himself made important contributions in this field particularly on birds and this work discloses the hand of a master and true scientist in clarity of exposition, selection of illustrated material and analysis of controversial data. Informed readers will finish the volume with the regret that the author did not include chapters on the relation of the testis mechanism to some of the other glands of internal secretion. Professor Sand's contribution ranks as one of the best in the large handbook.

Medicolegal

Malpractice Burns from Diagnostic Use of Roentgen Ray, Standard of Care Not Dependent on Locality—The defendant-physicians made fluoroscopic examinations of the plaintiff's hand with a view to the removal of a needle Burns followed. The plaintiff brought suit, alleging negligence. The trial court set aside a verdict in favor of the defendants and ordered a new trial. The defendants thereupon appealed to the Supreme Court of Oregon.

The plaintiff testified that in accordance with instructions from the defendants she held her hand in front of a fluoroscope, at a distance of 10 inches for from fifteen to twenty minutes, and that after a lapse of five or six minutes the fluoroscope was again used five or six times, the duration of the several exposures being the same. The defendants admitted that five or six fluoroscopic examinations were made, but they asserted that no exposure lasted more than ten seconds. The question, said the Supreme Court, is, Did the defendants fail to exercise reasonable care in their use of the x-ray machine? The undisputed evidence showed that if the exposures were made in the manner alleged by the patient, they were improper and injury would result. The defendant-physicians however, contended that they did not expose their patient's hand to an overdose of roentgen rays and that the condition of her hand was due to an infection.

A physician and surgeon, said the Supreme Court, is not a guarantor of results. Ordinarily however, he impliedly contracts that he will exercise the degree of care and skill usually possessed and exercised by those engaged in the same line of practice in similar localities. As a general rule, the degree of care and skill depends somewhat on locality. But the duration of exposure, especially when the roentgen rays are not used for treatment, has become so fixed and exact that physicians are cognizant of it, whether they practice in Pumpkin Center or in New York City. It would be negligence for a physician to expose a patient to roentgen rays for the length of time claimed by the plaintiff regardless of the locality in which the physician was practicing. The trial court instructed the jury that the defendants were to be judged not by the standard of care employed in all localities but by the standard which is employed by physicians "in localities like Rainier and similar localities." Although this instruction was correct as a statement of the general rule, said the Supreme Court, it was, as applied to the facts of this case, misleading and prejudicial. The patient was entitled to have the jury instructed that in the use of their x-ray machine the defendant physicians were to be judged according to the standard of care, skill and diligence that would have been exercised by "a physician and surgeon of ordinary care, skill and diligence," under the same circumstances and conditions, regardless of locality.

The authorities are in conflict as to whether negligence may be inferred solely from the fact that a roentgen burn has occurred. In the present case, said the Supreme Court, it is not necessary to invoke such a doctrine, since there was testimony tending to show an improper exposure. The trial court instructed the jury that the fact that the hand was burned by the roentgen rays was no evidence that the physicians were guilty of malpractice. This instruction was technically correct, but it may have misled the jury into the belief that the burn could not be taken into consideration along with other facts and circumstances. The jury was entitled to consider the alleged roentgen burn together with the evidence relating to the duration of exposure. The instruction should have been amplified. The same can be said, continued the court, with respect to the instruction of the trial court that "a physician or surgeon practicing his profession is not liable for errors or mistakes of judgment." A physician or surgeon is not liable for error of judgment, if the exercise of judgment is consistent with the exercise of reasonable care and diligence. But if the defendant-physicians, in the use of their x-ray machine, failed to follow the formula relative to the time of exposure universally accepted by the profession, it would not do for them, in order to avoid liability, to say "We exercised

our best judgment." To avoid liability, the judgment must be based on the exercise of reasonable care and skill.

The instructions given by the trial court, considered in their entirety, concluded the Supreme Court, are open to criticism and the trial court was warranted in setting aside the verdict of the jury and granting the plaintiff a new trial.—*King v Ditto (Ore)*, 19 P (2d) 1100

Evidence Verdict of Coroner's Jury Inadmissible—Blackwell was tried for murder. In the course of his trial a justice of the peace, who had acted as coroner when the homicide occurred, testified, over objection by the defendant, that he had caused an inquest to be held over the body of the deceased and the entire record of the inquest was read in evidence. Blackwell was convicted. He appealed to the Court of Appeals of Alabama, claiming that the admission of the record of the inquest was error.

The statutory proceedings of a coroner's inquest are wholly ex parte, said the Court of Appeal. The verdict of a coroner's jury is not binding on the defendant on trial for the alleged murder. To try the defendant on the ex parte verdict of a coroner's jury would deprive him of his right to be confronted with the witnesses against him and to cross examine them. The verdict of the coroner's jury in the present case may or may not have been based on evidence receivable in courts of justice. In cases of homicide, said the court quoting Ruling Case Law, vol 6, p 1172 the general rule is that the finding of a coroner or the verdict of a coroner's jury is not admissible in evidence for any purpose. The only object of a coroner's proceeding is to furnish prompt information that may guide the officers of the law in apprehending and prosecuting persons who appear to have been connected with a supposed homicide and to discover the evidence by which it may be investigated. Strictly speaking, the verdict of a coroner's jury has no legal effect. To admit the verdict and proceedings in evidence in a prosecution for homicide would lead to the subversion and final overthrow of the jury system and in nearly every case the rights of the commonwealth or of the accused would be prejudiced. The judgment of conviction in the trial court was therefore reversed and the case remanded.—*Blackwell v State (Miss)* 146 So 628

Evidence Angina Pectoris a Disease of the Heart—The appellant insurance company insured the life of the deceased. It limited its liability, however, to a return of the premiums paid, if the insured died from heart disease within one year from the date of the policy. The insured died within the year. The death certificate stated the primary cause of death as angina pectoris with chronic tortitis as a contributing cause. The beneficiary of the policy insisted that the words "angina pectoris" denote only a symptom and not a disease of the heart and brought suit. From a judgment in favor of the beneficiary the insurer appealed to the Supreme Court of Alabama. A medical expert testified that the words "angina pectoris" mean a pain in the chest. But you have got to have heart disease, he testified, to have angina pectoris, angina pectoris is really a name for heart disease. In Corpus Juris vol 2, p 1346, angina pectoris is described as a disease of the heart. The Supreme Court of Alabama concluded, therefore that angina pectoris is a disease of the heart and that that is the commonly accepted meaning of the term. The judgment in favor of the beneficiary was reversed and the case remanded.—*Liberty Nat Life Ins Co v Tellis (Ala)* 146 So 616

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons Chicago Jan 8 10 Dr Philip Lewin 104 South Michigan Blvd Chicago
Philippine Islands Medical Association Manila Dec 12 13 Dr Antonio S Fernando 817 Taft Avenue Manila Secretary
Society of American Bacteriologists Philadelphia Dec 27 29 Dr James M Sherman Cornell University Ithaca N Y Secretary
Southern Surgical Association Hot Springs Va Dec 12 14 Dr Robert L Payne 142 York Street Norfolk Va Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

18 803 1086 (Aug.) 1933

- Carcinoid Tumors of Gastro-Intestinal Tract (So-Called Argentaffine Tumors) T S Ratford Baltimore—p 803
- Curriculum Vitae of Two Gastric Cancers Contribution to Solution of Problem of Stomach Carcinoma T Scholz New York—p 834
- Primary Carcinoma of Pancreas A L Leven Minneapolis—p 852
- Multiple Benign Epithelioma of the Scalp (Turban Tumors) F Ronchese Providence R I—p 875
- Further Studies on Blood Chemistry of Hens Bearing Rous Sarcoma No 1 Helen M Dyer and J H Roe Washington D C—p 888
- *Experimental Study Effect of Radium Emanation on Pancreas of Dogs A L Leven Minneapolis—p 899
- Effect of Exposure of Chickens Inoculated with Rous Sarcoma to Electromagnetic Waves of High Frequency J R Ross Toronto Canada—p 905
- Intrathoracic Myxolipoma F C Narr and A H Wells Kansas City Mo—p 912
- Sarcomatous Degeneration of Uterine Leiomyoma with Metastases to Lungs and Heart Case M Criscitiello Jr Pittsfield Mass—p 919
- Role of Sodium Potassium Calcium and Magnesium in Cancer Review M J Shear Boston—p 924

Effect of Radon on Pancreas of Dogs—Leven describes experiments on dogs which indicate that implantation of radon into the pancreas would be a safe procedure in suitable cases of carcinoma of the pancreas at the time of exploration or secondary to cholecystogastrostomy. Radon in gold seeds would be preferable to high voltage roentgen therapy, since the effect can be more accurately directed to the desired area. That the pancreas has definite power of regeneration has been adequately indicated experimentally. This should prove to be an additional factor of safety in the use of radiotherapy in carcinoma of the pancreas. The author states that his experiments should not be considered as constituting a claim that carcinoma of the pancreas can necessarily be cured by radiation.

Sarcomatous Degeneration of Leiomyoma—Criscitiello presents a case of sarcomatous degeneration of uterine leiomyoma with unusual metastases to the lungs and the heart. Recognition of malignant changes should be attempted in the operating room by routine opening of all fibromatous tumors removed. If such changes are recognized a more radical operation is in order. Sarcomatous degeneration of fibromas is not rare. The incidence, as reported by different writers varies from 0.5 to as much as 10 per cent. Some authors deny that such malignant changes take place and claim that if a sarcoma develops from a preexisting fibroma or myoma it is due not to a degenerative process but to the development of a primary focus of a malignant condition. Although metastases from sarcoma of the uterus to the different organs and bones have been reported metastases to the heart are exceedingly rare.

American Journal of Orthopsychiatry, Menasha, Wis

7 241 (3 July) 1933

- Mental Health Emphasis in Fluoridation Qualitative Study H C Pate and C S Stevens New York—p 241
- Use of Play Technique as Experimental Procedure D M Levy New York—p 261
- Five Year Experience in Supervision of Psychiatric Psychology and I. In the Social Worker in Simulations and Training Section Meeting 1931 Chairman I G Lewis New York—p 27
- Certain Aspects of Treatment in Psychiatric Work with Children Chairman I S Wolfe New York members of the panel C McArthur J Richard Astoria Ore C Kuhn New York C H I Lee C J Ritt S W Hartman I Schwartz and D M Levy—p 31
- Treatment of the Child in the Family New York—p 37
- Psychology of the Child in the Family S H T. New York—p 37

American Journal of Public Health, New York

23 775-894 (Aug.) 1933

- Loss of Actinic Sunshine as Health Problem of Cities F O Tonney Chicago—p 775
- Is Malnutrition Increasing? Esther Jacobs Philadelphia—p 784
- Seasonal Distribution of Whooping Cough for Periods of High and Low Incidence G E Harmon Cleveland—p 789
- Epidemiology of Syphilis and Gonorrhea W L Munson Albany, N Y—p 797
- Practical Uses of Diphtheria Immunization Records E S Godfrey, Jr Albany N Y—p 809
- Inaugural Address J L Pomeroy Los Angeles—p 813
- Training of Health Personnel W S Leathers and A E Keller Nashville Tenn—p 816
- Relationship of Public Health to Doctor in Private Practice C W Decker, Los Angeles—p 824
- Value of Culture Tests in Diagnosis of Diphtheria Hazel M Hatfield and Alice G Mann New York—p 847
- Convenient Feces Specimen Container M Frobisher Jr Baltimore—p 851

Am J Roentgenol & Rad Therapy, Springfield, Ill

30 145 288 (Aug.) 1933

- Pineal Body Roentgenologic Considerations J H Vastine Philadelphia—p 145
- *Roentgen Findings in Suppuration of Petrous Apex (Petrositis) H A Taylor New York—p 156
- Roentgen Diagnosis of Spinal Deformities M L Sussman and M A Kugel New York—p 163
- Calcareous Concretions in Raynaud's Disease H E Christman Boston—p 177
- Genealogy of Roentgen Rays O Glasser Cleveland—p 180
- Multiple Myeloma with Spinal Cord Involvement H W Jacob and E A Kahn Ann Arbor Mich—p 201
- Absence of Left Diaphragm Associated with Inverted Thoracic Stomach Z Sagal New York—p 206
- *Auditory Effects of Roentgen Rays in Dogs E Girden and E Culler Urbana Ill—p 215
- Effective Applied Voltage as Indicator of Energy Emitted by Roentgen Ray Tube L S Taylor G Singer and C F Stoneburner Washington D C—p 221
- Roentgen Ray Output Comparisons of Therapy Circuits and Tubes M J Gross and Z J Atlee Chicago—p 229
- Physical Foundations of Chest Roentgenography Part I R B Wilsey Rochester, N Y—p 234

Roentgen Observations in Suppuration of Petrous Apex—Taylor states that for the demonstration of suppuration in the petrous apex the most information is obtained from a roentgenogram of the base of the skull, because the two pyramids are depicted at the same time and are contrasted by the surrounding bony structures and show their structural character and detail more clearly. The routine examination of the mastoid processes includes one view of the base of the skull. Should a complicating petrous suppuration develop, the original roentgenogram of the petrous bones is available for comparison with subsequent roentgenograms, permitting the detection of the earliest changes. The patient should be supine when the roentgenogram is being taken with the head, lower than the rest of the body, resting on the vertex, so that a line drawn through the external auditory canal and superior orbital margin is parallel to the cassette, which is horizontal. The sagittal plane of the head should be perpendicular to the table. The tube should be tilted upward 15 degrees. The central ray should be directed 1 inch in front of the external auditory canal, in the midline. The same position can be accomplished by hyperextending the body, a block being used as a support in the mid and lower dorsal regions, the elevation being about 8 inches. Suppuration in the apical portion of the petrous pyramid can be recognized clinically and roentgenologically. The clinical recognition depends on profuse otorrhea occurring after a period of cessation, following a simple mastoidectomy, pain along the distribution of the ophthalmic branch of the fifth nerve, retro-orbital and low grade sepsis. The roentgen observations are diminished aeration, deficient trabeculations, intense atrophy, perforation and finally destruction of the apical contour. These changes occur only in pneumatized petrous pyramids. Operation is indicated when clinical symptoms and roentgenologic observations are present. In cases showing positive roentgenologic observations and no clinical symptoms the drainage is adequate and if operation is not performed probably there will finally be a protracted otorrhea.

Auditory Effects of Roentgen Rays—Girden and Culler exposed two dogs to a variety of doses over a period of months so as to determine the effects of the roentgen rays on their auditory acuity. From their observations the authors suggest

the conditioned response technic as a means of direct study of the effects of roentgen rays on hearing in dogs. By means of this approach, accurate investigation of the effects of roentgen rays on hearing itself is permitted. In the animals reported on, as well as in subsequent studies nearing completion an initial rise in auditory acuity results from exposure to small doses of roentgen rays generated at 85 kilovolts and 5 milliamperes. This increase in acuity is a transient effect lasting from two to four weeks. Cumulated doses up to 11,100 roentgens in one animal and over 4,400 in another did not result in death and did not impair the hearing. The skin burns were due to overexposure to soft rays. Spacing of the larger doses over longer periods of time avoids this hazard. The authors' investigation is being widened to include the study of the effects at higher voltages and also, by means of the oscillograph technic, the direct effect on the nervous mechanism involved in audition.

Annals of Surgery, Philadelphia

98 161 320 (Aug.) 1933

- Annular Gastrectomy. Further Observations on Cause of Its Failure. W. H. Barber. New York—p. 161.
 Tumors of the Stomach. W. Walters. Rochester, Minn.—p. 168.
 Tumors of the Duodenum. G. P. LaRoque. Richmond, Va. and E. L. Shifflett. Cleveland—p. 178.
 Double Primary Malignant Tumors of the Colon. C. S. White. Washington, D. C.—p. 186.
 Acute Obstruction of Duodenum Due to Submucous Hematoma. G. D. Oppenheimer. New York—p. 192.
 Perforated Peptic Ulcer in German Clinics. Analysis of Four Thousand Four Hundred and Two Cases. A. M. Craves. New Orleans—p. 197.
 *Acute Perforated Gastric and Duodenal Ulcers. H. K. Shrawan. Detroit—p. 210.
 Total Gastrectomy. C. A. Roeder. Omaha—p. 221.
 Cardiospasm. Its Diagnosis and Treatment. H. J. Moersch. Rochester, Minn.—p. 232.
 External Duodenal Fistula. D. A. Willis and J. M. Mora. Chicago—p. 239.
 *Excisions Around External Gastrointestinal Fistulas. Experimental Studies on Their Etiology and Further Experience with the Kaolin Powder Treatment. F. W. Co-Tui. New York—p. 242.
 Arterial Embolotomy. M. Danzig. Newark, N. J.—p. 249.
 Surgical Diseases of the Shoulder Bursa. J. M. Hitzrot. New York—p. 273.

Gastric and Duodenal Ulcers.—Shrawan reports a consecutive series of 227 cases of acute perforated gastric and duodenal ulcers in which operation was performed. Less than 2 per cent of the patients were women, the average age was 37 years. Perforations increased in frequency during the spring, reached a peak number in the summer, gradually decreased in number during the autumn, and reached the lowest rate in the winter months. As compared with the total number of operations done in the author's hospital during the period of thirteen years covered in his report, operations for perforated gastric and duodenal ulcers have increased in frequency nearly threefold. A definite history of chronic gastric ulcer was obtained in more than 80 per cent of the cases, and 10 per cent had had medical management. Severe pain in the epigastrium was the typical initial symptom. Vomiting occurred once or twice in about 50 per cent. Bloody vomitus was a rarity. The clinical observations were of far greater comparative value than those of the laboratory. Among the latter, fluoroscopic examination is the exception. On admission to the hospital, 85 per cent were immediately and correctly diagnosed. The mortality increased directly with the size of the opening, the amount and extent of the peritoneal soiling and the time allowed to elapse between rupture and operative treatment. Frequency of perforation, according to the location of the ulcer, was respectively duodenal, gastric and pyloric. Recovery was in the same sequence. The proportion of recovery remained nearly stationary for all ages between the second and sixth decades, 36 per cent died within the first twenty-four hours after operation. General peritonitis was the most frequent cause of death, then came shock, pneumonia and complications requiring secondary operations. Spinal anesthesia was the most satisfactory. Operative treatment, while individualized, was confined to simple closure, excision and closure, and closure with added gastrojejunostomy. Simple closure was employed in the last 132 cases with a 10 per cent reduction in mortality. Of these 227 patients 55 or 24.22 per cent, died and 172 or 75.77 per cent, recovered.

External Gastro-Intestinal Fistulas.—Co Tui established by experiments on the dog that trypsin can cause skin excor-

tions. He treated 162 cases of peristomal excoriations with kaolin powder. The principle of the treatment is the removal of the enzyme trypsin by kaolin particles because of a difference in their electrical charge. A plentiful amount of kaolin powder is applied over the mouth of the fistula and all around it. The number of changes necessary depends on the condition of the abdominal wall and the amount of drainage. A safe rule is to change the powder as soon as it becomes saturated. In duodenal fistulas it is generally necessary to change the powder from every hour to every three hours, in ileostomies from four to six hours, in cecostomies, from four to eight hours, and in sigmoidostomies twice a day. It must be borne in mind that the success of the treatment depends on the removal of as much of the enzyme as the fistula discharges. The application of petrolatum to the abdominal wall before using the powder defeats the purpose for which kaolin is used, as the petrolatum coated particles of kaolin then become electrically inert.

Archives of Neurology and Psychiatry, Chicago

30 481 708 (Sept.) 1933

- Familial Spastic Paralysis. Report of Three Cases in One Family and Observation at Necropsy. H. A. Paskind and T. T. Stone. Chicago—p. 481.
 Reflex Changes After Injury to Pyramidal Tract in Macaque Gibbon and Chimpanzee. W. Schick. New York—p. 501.
 Disturbances in Visuomotor Gestalt Function in Organic Brain Disease Associated with Sensory Aphasia. Lauretta Bender. New York—p. 514.
 Clinical Variables in Schizoid Personalities. J. Kasanin. Howard, R. I. and Zitha A. Rosen. Boston—p. 538.
 *Blood Cholesterol in Schizophrenia. J. M. Looney and Hazel V. Childs. Worcester, Mass.—p. 567.
 Optic Pseudoneuritis and Pseudopapilledema. R. K. Lambert and H. Weiss. New York—p. 580.
 Myelitic and Myelopathic Lesions. V. Compression of the Spinal Cord by Expanding Lesions Producing Mild, Moderate or Marked Interference with Circulation Leading to Myelopathy. M. Keschner and C. Davison. New York—p. 592.

Cholesterol in Schizophrenia.—Looney and Childs observed approximately fifty men presenting schizophrenia over a period of seven months at intervals of two weeks and of three months. The cholesterol content of the whole blood was determined by the method of Myers and Wardell. The mean cholesterol values were 146 ± 3 mg per hundred cubic centimeters for the first period, 161 ± 28 mg for the second period and 166 ± 25 mg for the third period. The mean value for twenty-six normal men was 175 ± 52 mg per hundred cubic centimeters. Both the schizophrenic patients and the controls showed great variability in the cholesterol values, the former having a standard deviation of about 20 mg and the latter of 27 mg. The difference between the mean value for the first period and the mean values for the last two periods is believed to be due to a seasonal variation in the cholesterol content of the blood. No correlations could be shown between the blood cholesterol and the basal metabolic rate or the emotional status. Schizophrenia seems to be characterized by a slight degree of depression of the cholesterol content of the blood.

Canadian Public Health Journal, Toronto

24 355 404 (Aug.) 1933

- Presidential Address. Public Health Accomplishments in Light of Possible Achievement. W. Warwick. St. John, N. B.—p. 355.
 *Value of Immune Serum in Poliomyelitis. Case Notes on Localized Outbreak in Prince Edward County, Ontario. N. H. Sutton. Peterboro, Ont.—p. 360.
 The Work of the Health Organization of the League of Nations. J. G. Fitzgerald. Toronto—p. 366.
 Incidence of Disease in School Age Children. J. T. Phair. Toronto—p. 373.
 Algal Nuisances in Surface Waters. N. J. Howard and A. E. Berry. Toronto—p. 377.

Value of Immune Serum in Poliomyelitis.—Sutton reports an outbreak of nineteen cases of poliomyelitis, eighteen of which were treated with convalescent serum. Of the eighteen, serum was administered to thirteen (group A) in a definitely preparalytic stage, to two (group B) in the late preparalytic stage, and to three (group C) in the early paralytic stage. An examination of these patients eight months later presented the following results. In group A there was a 100 per cent recovery with no paralysis. One patient in group B showed no paralysis. The other one showed complete recovery in the abdominal muscles and in three of the four extremities involved.

The left shoulder showed little or no improvement. This was a fulminant case, with 50 per cent recovery. The three patients in group C showed recovery to a marked degree in the less severely affected muscles, so that each patient will have only one extremity that will not function usefully. All can become self supporting. The one patient who did not receive serum, because he was seen too late, will be badly incapacitated and probably dependent.

Colorado Medicine, Denver

30 317 366 (Sept.) 1933

- Obliterating Appendix as Cause of Disturbances Connected with Abdominal Nerves and Lymphatics L Freeman Denver—p 320
Factors Affecting Mortality in Acute Appendicitis G B Packard Denver—p 322
Cystic Appendix Report of Three Cases L E Likes Lamar—p 327
Demonstration of Normal and Pathologic Nephroptosis H H Wear Denver—p 333
Obstetrics from the Standpoint of the General Practitioner C T Knuckey Lamar—p 338
Uterine Hemorrhage W H Halley and P W Whiteley Denver—p 340
Local Anesthesia in Thyroid Surgery Virginia C Van Meter, Denver—p 344
Means and Methods of Goiter Prophylaxis M O Shivers Colorado Springs—p 345

Georgia Medical Association Journal, Atlanta

22 279 320 (Aug.) 1933

- How Does Medicine Advance? C R Stockard New York—p 279
Congestive Heart Failure S T R Revell, Louisville—p 282
Present Status of Iodine Therapy in Hyperthyroidism D H Poer Atlanta—p 288
Acrodynia H D Youmans Lyons—p 293
Fibroid Tumor of Mesentery Case Report O H Weaver Macon—p 295
Neurologic Hazards of Spinal Anesthesia W A Smith Atlanta—p 297
Vesical Calculi R Bell Thomasville—p 303
Artificial Pneumothorax J A Redfearn Albany—p 305
Practitioner's Urologic Problems W L Bazemore and V H McMichael Macon—p 306

Iodine Therapy in Hyperthyroidism—Poer states that iodine will produce a remission in from 80 to 90 per cent of all cases of hyperthyroidism. The remission begins within forty-eight to seventy-two hours and reaches the point of maximum response in from ten to eighteen days. A dose of 6 mg of iodine a day is necessary to produce the maximum response, a larger dose is advocated to insure this maximum benefit. Because of the similarity of response to iodine in both the hyperthyroidism associated with exophthalmic goiter and that appearing in toxic adenomas it may be said that the proper use of iodine is an adequate dose (5 drops daily at least), given over a period of from ten to eighteen days until the point of maximum response is reached, at this point operation should be performed. Because of the dangers of postiodine reactions, development of refractoriness to iodine, the inability to cure hyperthyroidism permanently and the loss of its beneficial action in postoperative crises, iodine should not be used in any other manner in hyperthyroidism. If for any reason it becomes necessary to postpone or delay operation iodine should not be administered until these reasons have been removed. A strictly medical regimen consisting of rest in bed, sedatives, ice caps and such local treatments as are indicated should be instituted until the patient is prepared for the surgical procedure. Iodine has no place in the treatment of the physiologic enlargement of the thyroid during puberty and early adolescence in women, its indiscriminate use in foods, patent remedies, water and so on, is unscientific and dangerous.

Johns Hopkins Hospital Bulletin, Baltimore

57 117 148 (Sept.) 1933

- Blood of Normal Men and Women Erythrocyte Counts Hemoglobin and Volume of Packed Red Cells of Two Hundred and Twenty Nine Individuals M M Wintrobe with technical assistance of J W Lardberg Baltimore—p 118
Recent Knowledge Regarding the Physiology of the Glossopharyngeal Nerve in Man with Analysis of Its Sensory Motor Cutaneous and Secretory Functions J L Reichert and L J Path San Francisco—p 121
Role of Venular Distention in the Spread of Infections from Subcutaneous Sites into Vessels L B Fleener Baltimore—p 123
Formation of Rat Hemocytes in Tissue Culture W H Lewis Baltimore—p 127

Journal of Experimental Medicine, New York

58 253 384 (Sept.) 1933

- Lymphomatosis Myelomatosis and Endothelioma of Chickens Caused by a Filtrable Agent I Transmission Experiments J Furth New York—p 253
Varying Hemolytic and Constant Combining Capacities of Streptolysins Influence on Testing for Antistreptolysins B E Hodge and H F Swift New York—p 277
Studies on Uncomplicated Coryza of the Domestic Fowl I Isolation of a Bacillus Which Produces a Nasal Discharge J B Nelson Princeton N J—p 289
Id II Relation of the Bacillary Coryza to That Produced by Exudate J B Nelson Princeton N J—p 297
Experimental Epidemiology of Tuberculosis Effect of a Primary Infection on Contact Tuberculosis in Rabbits M B Lurie Philadelphia—p 305
Resistance of Rabbits to Tuberculosis After Vaccination with Partially Defatted Tubercle Bacilli K C Smithburn New York—p 329
Studies on Meningococcus Infection III Antigenic Complex of the Meningococcus A Type Specific Substance G Rake and H W Scherp New York—p 341
Id IV Antigenic Complex of the Meningococcus Group Specific Carbohydrate and Protein Fractions G Rake and H W Scherp New York—p 361
Id V Presence of Meningococcus Precipitinogens in Cerebrospinal Fluid G Rake New York—p 375

Epidemiology of Tuberculosis—Lurie states that 73 per cent of normal rabbits exposed for about one year to cage mates infected with tubercle bacilli of bovine type acquired a respiratory or alimentary tuberculosis that was fatal in 50 per cent, 63.6 per cent developing tuberculosis during the first six months. Of the rabbits vaccinated with tubercle bacilli of human type and exposed in the same cages at the same time, only 36.8 per cent acquired tuberculosis during the first six months. Later this resistance waned, and by the end of the year 60 per cent had developed tuberculosis, of which 38 per cent succumbed. The disease in the vaccinated rabbits was shown to be of exogenous origin by the isolation in pure culture from the same rabbit of the human type bacillus from the primary infection and of the bovine type bacillus from the naturally acquired lesion. The vaccination reduced the incidence, extent and mortality of the disease, affected the route of infection, changed its pathologic character and retarded its progress. The disease acquired by vaccinated rabbits shared many characteristics with the adult type of tuberculosis in man.

Meningococcus Precipitinogens in Cerebrospinal Fluid—Rake points out that precipitin tests, carried out on the cerebrospinal fluid from cases of meningococcal meningitis with monovalent serums, demonstrate the presence in that fluid of type specific precipitinogens of the meningococcus. Negative results are secured when the spinal fluid is obtained after the commencement of intrathecal serum treatment and also occasionally when the numbers of infecting organisms are small. The reaction offers an easy and rapid method of ascertaining to which type of meningococcus a particular case of meningitis is due and facilitates the immediate use of monovalent therapeutic antimeningococcus serum. Typing by means of the precipitin reaction can be confirmed by agglutination of the strain of organism responsible for the infection, if such a strain is isolated. Confirmation by means of agglutination has been possible in all the author's cases. Spinal fluids from other diseases of the meninges and the central nervous system fail to give any precipitin reaction with the monovalent serums.

Journal of Immunology, Baltimore

25 121 198 (Aug.) 1933

- Merthiolate as Preservative for Biologic Products II Production and Preservation of Diphtheria Toxin L C Morgan W A Jamieson and H M Powell Indianapolis—p 121
Effect of Staphylococcus Bacteriophage Lysin on Resistant Strains of Staphylococci M L Rakieten New Haven Conn—p 127
Preparation of Diphtheria Toxin by Treatment of Toxin with 1 per Cent Formalin and Precipitation with Acetone A Wadsworth J J Quigley and Gretchen R Sickle Albany N Y—p 139
Specific Precipitation Test for Standardization of Type I Antipneumococcus Serum Rachel Brown Albany N Y—p 149
Blood Grouping Among the Blackfeet and Blood Tribes of American Indians G A Matson St Louis and H F Schrader Browning Mont—p 155
Certain Characteristics of Water in Double Protein of Normal as Compared with That of Antipneumococcus Horse Serum L D Felton and Gladys Kaufmann Los Angeles—p 165
Specificity of B Cell and Iodinated Proteins I H Tirkelstein New York—p 179
Effect of Heat Inactivation of Tetanus R Schreckel Baltimore—p 183

Medical Annals of District of Columbia, Washington

2 177 196 (Aug.) 1933

- The High Cost of Standardization F A Fenning Washington —p 177
 The Sinuses as Foci of Infection W H Jenkins Washington —p 179
 Urinary Volume and Specific Gravity as Indices of Kidney Function
 H H Ieffler Washington —p 182
 Gastro Intestinal Symptom Complex of Mesenteric Arteriosclerosis
 M W Perry Washington —p 187
 Rational Surgical Approach in Pelvic Inflammations W J Cusack
 Washington —p 190

Medical Journal and Record, New York

138 145 180 (Sept. 6) 1933

- Pruritus Ani A Bassler and R J Connors New York —p 145
 Insulin Therapy in Certain Disorders of Nutrition Follow Up Report
 of Thirty Five Patients Treated During the Past Two Years C W
 Iueders Philadelphia —p 146
 Correcting Errors in Diet V E Levine Omaha —p 149
 Bacteriostatic Action of Mallophone in Vitro P A Tetrault Lafayette
 Ind —p 151
 Bacteriophage in Peritonitis S Freedman New York —p 154

Military Surgeon, Washington, D C

73 61 116 (Aug.) 1933

- Some Etiologic Factors of Acute Appendicitis A Egdahl —p 61
 Hemochromatosis a Possible Danger of Copper Therapy J R Darnall
 —p 70
 Value of Intravenous Vaccine Therapy in Arthritis H P Marvin
 —p 74
 Continuous Baths for the Gravely Wounded M Setz translated by
 G M Blech —p 79
 Tribulations of a Medical Department Private in the World War T A
 Symanski —p 83

Vaccine Therapy and Arthritis—Marvin used vaccine therapy in only thirty-five patients although he has treated more than 125 cases of arthritis. His aim has been to select moderately severe to severe cases of acute and chronic infectious arthritis, that is those patients who had been treated for a reasonable period with other forms of treatment and had shown little or no improvement and similar cases in which improvement was expected slowly without vaccine. Although his series of cases is small, the author feels that intravenous vaccine is most beneficial in the treatment of both the acute and chronic infectious types of arthritis. He realizes that from 75 to 80 per cent of all arthritides become sufficiently improved under ordinary types of therapy for the patients to resume their occupations and carry on their normal everyday life. Intravenous streptococcus vaccine is an important addition to other forms of treatment, hastening the recovery in many cases and materially helping many of the remaining 20 or 25 per cent. The author has given weekly intravenous injections of Cecil's stock *Streptococcus viridans* cultures in a vaccine diluted to 125 million killed bacteria per cubic centimeter. His results have been such that he hopes to use this treatment in addition to other forms of therapy, in all his cases of infectious arthritis in the future. He believes that this treatment will be universally used in the near future and will become one of the standard therapeutic measures in the treatment of most cases of infectious arthritis.

New York State Journal of Medicine, New York

33 907 974 (Aug. 1) 1933

- Diverticulosis of Alimentary and Urinary Tracts E Beer New York
 —p 907
 The Ocos the Demos and Medicine I Goldston New York —p 915
 Fibroids of the Uterus Their Recognition and Treatment R T Frank
 New York —p 919
 Treatment of Hepatic Cirrhosis with Insulin Preliminary Report with
 Case Histories J McCabe and J F Hart New York —p 924
 Pediatric Diagnosis of Orthopedic Conditions A Whitman New York
 —p 930
 The Ontario County Plan for the Medical Care of Indigents H J
 Knickerbocker Geneva —p 934
 Hydrogen Ion Concentration Its Elementary Principles G Milot
 New York —p 937
 The Heart in Pneumonia I H Sigler Brooklyn —p 941
 Differential Diagnosis in Recurring Attacks of Jaundice from Common
 Duct Stone and Pancreatitis with Reference to Bile Sand R T
 Carter New York —p 944
 Gas Bacillus Infection Complicating Appendicitis C A Traver Albany
 —p 946

Hepatic Cirrhosis and Insulin—McCabe and Hart report the results obtained in five patients suffering from hepatic cirrhosis with ascites who were put on a high carbohydrate

diet and as much insulin as they could take comfortably. One of the patients has remained on the high carbohydrate diet through his own choice, yet five years has passed without a return of the ascites. Another patient responded so quickly to the treatment that the authors feel that the endogenous toxin was benign. In another patient there was a definite alcoholic history for thirty years. After a year and a half of treatment the patient stated that he felt strong and was anxious to resume work. About two years after the beginning of treatment all laboratory tests were normal. Examination showed that the patient was in excellent condition without ascites, and that 168 days had elapsed since the last tapping. In the fourth patient one with definite syphilitic cirrhosis, the authors feel that the arsenic was detrimental. This was the only patient in whom insulin caused shock. On the last examination the patient was emaciated and was being tapped about every two weeks. In the last patient the entrance diagnosis of hepatitis or subacute yellow atrophy with cholemia was justified from the history. The use of intravenous dextrose and insulin, although in limited amounts, seems to have been specific. The patient improved and his jaundice faded. Decompensation, however, set in about six weeks after the initial symptoms of the disease. The authors do not offer this treatment as a cure of hepatic cirrhosis nor do they offer it as a permanent cure of the ascites because they realize that longer periods of observation and postmortem studies must be made. What they do believe is that it will reestablish compensation in some cases and lower the transudation in others so that the intervals between tapping may be extended.

Philippine Journal of Science, Manila

51 281 408 (July) 1933

- Contributions to Study of Internal Secreting Glands in Filipinos I
 Topography and Size of the Thymus J C Nanagas Manila —p 281
 Physiology of Reproduction in the Rabbit Age of Sexual Maturity
 Breeding Season Duration of Normal Pregnancy and Ovulation M
 Manresa Los Banos —p 323
 Philippine Kinds of Subspecies *Callirhipis* F van Emden Dresden
 Germany —p 331
Chironomidae from Japan (Diptera) H Marine Tanytarsus M
 Tokunaga Kyoto Japan —p 357
 New or Little Known *Tipulidae* from Eastern Asia (Diptera) M H
 C P Alexander Amherst Mass —p 369

Public Health Reports, Washington, D C

48 955 992 (Aug. 11) 1933

- Zinc in Relation to General and Industrial Hygiene C K Drinker and
 I T Fairhall —p 955
 Size Frequency of Industrial Dusts J J Bloomfield —p 961
 Relation of Arsenoxide Content to Toxicity of Fresh and Old Samples
 of Arspenamine New Chemical Tests on Arspenamines S M
 Rosenthal and T F Probev —p 969

Toxicity of Arspenamine—Rosenthal and Probev determined the arsenoxide content and toxicity of thirty-five recent samples of arspenamine. A correlation sufficiently close was obtained to attribute the enhanced toxicity of certain products chiefly to arsenoxide. Eleven samples of arspenamine from 3 to 10 years of age originally of low toxicity, were studied. With the exception of one product an increase of toxicity roughly proportionate to the age was found. Sufficient arsenoxide was present to account for the increases in toxicity. The authors describe a color reaction between neorsphenamine and lead acetate which detects chemical differences between various products and a simple test (the tungstic acid color test) to distinguish between arspenamine neorsphenamine and sulph arspenamine.

Tennessee State Medical Assn Journal, Nashville

26 321 368 (Aug.) 1933

- Functional or Preclinical Stage of Essential Hypertension G E Brown
 Rochester Minn —p 321
 Role of Hematopoietic Hormone (Addison) in Diseases of the Blood
 R S Morris Cincinnati —p 326
 Primary Carcinoma of the Ureter Case Report T R Barry Knox
 ville —p 334
 Studies on Milk in Relation to the Goiter Problem W Weston
 Columbia S C —p 340
 Bronchial Asthma Present Status of Its Diagnosis Treatment and
 Control H Spitz Nashville —p 348
 The Problem Child as Concerns Especially Mental Hygiene W E
 Van Order Chattanooga —p 357

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

14 207 296 (Aug.) 1933

- Cytologic Changes in Liver in Rift Valley Fever with Especial Reference to Nuclear Inclusions G M Findlay —p 207
Variation in Agglutination of Stock Cultures of Meningococci B G Maegraith —p 219
Rough and Smooth Variants in Stock Cultures of Meningococci B G Maegraith —p 227
*Experimental Observations on Toxic Effects of Staphylococcal Filtrates Introduced Enterally in Laboratory Animals G R Borthwick —p 236
Size of Virus of Fowl Plague Estimated by Method of Ultrafiltration Analysis W J Elford and C Todd —p 240
Gonadotropic Hormones (p Factors) V Effect of Large Doses on Subsequent Fertility P G Marshall —p 246
Infective Agent in Tumor Filtrates Further Investigation by Means of Antisera to Normal Tissues W E Gye and W J Purdy —p 250
Heterotransfer of Two Filtrable Tumors Investigation by Means of Immune Serums W J Purdy —p 260
Observations on Developmental Forms of Psittacosis Virus S P Redson —p 267
Reversibility of Neutral Salt Action on Complement J Gordon and F C Thompson —p 277
Experimental Hypertension and Arterial Lesions in Rabbit M Kremer S Wright and R W Scarff —p 281
Study of Enzymes of Agalactia Virus Antonette Pirie and Barbara Elizabeth Holmes —p 290

Toxic Effects of Staphylococcus Filtrates—Borthwick records his experiments which illustrate how rabbits and guinea-pigs may be protected normally against staphylococcus toxin when it is introduced directly into the alimentary tract. The results suggest that the inactivating effect of the acid contents of the stomach is an essential factor in this protection and explain the failure of previous workers to reproduce experimentally in these animals the condition of "food poisoning" by staphylococcus toxin as observed in the human subject. The sensitiveness of this toxin to slightly acid or alkaline reactions is of special interest. On the other hand, the local and general toxic effects produced by staphylococcus filtrates introduced into the stomach of guinea-pigs after neutralization of the contents afford an interesting demonstration that the toxins of staphylococci growing in certain articles of food may produce serious poisoning. It seems likely also that the hydrogen ion concentration of the stomach contents is a factor that determines the occurrence of such poisoning in the human subject and this may explain the variable results observed by Jordan and Hall when volunteers were fed with milk containing staphylococcus toxin. The experiments indicate how, under certain conditions small laboratory animals can be utilized for further inquiry into this form of food poisoning, and may have a more general application in the study of the effects of other bacterial toxins on the alimentary tract. The author observed that when staphylococcus toxin is added to the gastric contents in vitro a slightly acid (pH 6.8) or a slightly alkaline (pH 7.8) reaction impairs its activity whereas no inactivation occurs at pH 7.3. Symptoms of poisoning can be produced only occasionally in guinea pigs and rabbits when toxin is introduced directly into the stomach. Uniformly positive results are obtained in experiments in which the reaction of the stomach is adjusted to pH 7.3 at the time of introduction of the toxin. The animals die within five days and post-mortem examinations show signs of acute gastroenteritis and marked congestion of the internal organs associated with hemorrhage in the stomach and kidneys. Symptoms of poisoning can be produced by intrarectal inoculation of the toxin when the rectum has been irrigated with saline solution and the reaction adjusted to pH 7.3. Post-mortem features are similar to those obtained after the introduction of toxin into the stomach. This method is not so effective as inoculation into the stomach.

British Medical Journal, London

1 1 1 1 (Aug. 12) 1933

- Na and Health Policy Cical Survey J I Bicknell —p 2
The Effect of Serum in Prevention of Pneumonia (Cont. H J
The Effect of Serum in Prevention of Pneumonia (Cont. H J
The Effect of Serum in Prevention of Pneumonia (Cont. H J
The Effect of Serum in Prevention of Pneumonia (Cont. H J
The Effect of Serum in Prevention of Pneumonia (Cont. H J

Journal of Tropical Medicine and Hygiene, London

36 233 248 (Aug. 15) 1933

- *Substitute for Wassermann Test for Up Country Work with Observations on Halarsol in Yaws K W Todd —p 233
Symptomatology of Yaws in Liberia Details of Statistical Method Used in This Study G W Harley —p 235

Meinicke Turbidity Reaction—Todd presents a simple substitute for the Meinicke turbidity reaction, in which to 3 drops of serum he adds 1 cc of Meinicke's turbidity reagent after diluting it at 50 C with ten times its volume of a 3 per cent solution of sodium chloride and a 0.01 per cent solution of sodium carbonate. He compares this with the control tube, to which has been added 1 drop of formaldehyde. A double positive reaction after five to ten minutes is turbid, after three to six hours it is clear, and after eighteen to thirty hours it is clear also. A weak positive reaction after five to ten minutes equals the control after three to six hours it is turbid, and after eighteen to thirty hours it is clear. A doubtful reaction is doubtful after five to ten minutes equals the control after three to six hours and is clearer than the control after eighteen to thirty hours. A negative reaction is doubtful after five to ten minutes and after three to six hours, and equals the control after eighteen to thirty hours.

Lancet, London

2 335 392 (Aug. 12) 1933

- Hematemesis M E Shaw —p 335
Current Theories of Etiology of Pellagra Harriette Chick —p 341
*Adrenotropic Hormone of Anterior Pituitary Lobe J B Collip Evelyn M Anderson and D I Thomson —p 347
Technic of Suprapubic Prostatectomy W F M Mitchell —p 348
Psoriasis and Rheumatism Comparison Elizabeth Hunt —p 351
*Dinitro-o Cresol as a Stimulator of Metabolism E C Dodds and W J Pope —p 352

Suprarenotropic Hormone—Collip and his associates present proof that the suprarenotropic principle as obtained in refined extracts is distinct from the thyrotropic principle. The hypophysectomized rat is a satisfactory test animal for detecting the presence of the suprarenotropic hormone. They report a series of tests on 125 rats which were completely hypophysectomized: (1) loss of weight following hypophysectomy, (2) complete failure to grow, (3) atrophy of the left suprarenal removed for control examination before starting the injections and (4) absence of any fragments of the pituitary by careful inspection at the time of necropsy. In some of the animals the authors have had further evidence of the completeness of the hypophysectomy by determining the basal metabolic rates and by serial sections of the sella turcica. The animals used were hypophysectomized from eleven to 148 days previously. Before starting the injections the left suprarenal was removed, weighed and sectioned for histologic examination. Removal of one suprarenal from the hypophysectomized rat is not followed by a compensatory hypertrophy of the other suprarenal, such as occurs in the normal animal. In six control animals from which the left suprarenal was removed from eight to twenty-three days after hypophysectomy and the right suprarenal one week later, the right suprarenal in each case weighed either the same as or less than the left suprarenal of the same animal and all showed marked atrophy of the cortex by histologic examination. In another group of seven hypophysectomized animals receiving Witte's peptone (20 mg daily) or extracts of anterior pituitary free from the suprarenotropic hormone there was no evidence of any repair of the atrophy that is seen in the untreated hypophysectomized rat. Of forty different extracts of the anterior pituitary lobe that have been tested thirty-four were found to contain the suprarenotropic hormone. Eight of these extracts show a fairly high degree of potency causing an increase of from 50 to 300 per cent in the weight of the right suprarenal over that of the left suprarenal which had been removed previously as a control. Two of the extracts that have been assayed brought about repair of the suprarenal in the hypophysectomized rat when 0.025 cc (0.125 mg of total solids) was administered twice a day for one week. Four extracts with a high degree of potency showed no trace of the thyrotropic hormone. The extracts had no effect on the growth of the body. Extracts boiled for thirty minutes still showed suprarenotropic activity. Active extracts were found to be ineffective when administered orally. The

authors obtained the purest extracts of the suprarenotropic principle from a fine flocculence, which has separated out on concentrating a 75 per cent acetone-soluble fraction at from μ 5 to 6. The latter has been obtained as a by-product in the purification of the thyrotropic fraction in the filtrate of the original aqueous extract after the tricalcium phosphate adsorption treatment to remove growth hormone, as in the Q process.

Dinitro-Orthocresol as Stimulator of Metabolism—Dodds and Pope, in investigating the pharmacologic action of the nitrophenols as stimulators of metabolism, observed the oxygen consumption of guinea pigs by a modified Krogh technique and, when a steady figure had been obtained for the basal rate, the substance to be tested was injected, or alternatively administered by mouth, and the effect on both temperature and oxygen consumption was studied. Of the many compounds investigated, dinitro-orthocresol appears to be the most promising. For example, the basal oxygen consumption rate of the guinea pig, measured in cubic centimeters per gram weight of guinea pig per minute, was 0.0135 and the temperature was 97° F. Dinitro-orthocresol (8 mg) dissolved in sesame oil was administered by subcutaneous injection. One hour afterward the oxygen consumption rose to 0.0376 cc per minute and the temperature to 100.9° F. Four hours later the temperature had reached 102.8° F. Similar experiments with 2,4-dinitrophenol produced a rise of about one third the magnitude. Observations on the toxicity of these two compounds indicated that they are of the same order. Both compounds are active when administered by mouth. The authors believe that the dinitro-orthocresol compound is more suitable for clinical experimentation, since about one third of the amount is required to produce the same effect as with the dinitrophenol. The authors are now investigating the clinical application of these compounds.

Quarterly Journal of Medicine, Oxford

2 157-280 (April) 1933

- Uveoparotid Tuberculosis (Febria Uveoparotidea of Heerfordt) H. G. Garland and J. C. Thomson—p. 157
- Value of Artificial Pneumothorax in Pulmonary Tuberculosis C. Shaw—p. 179
- *Comparison Between the Bendien Chemical Test and Sedimentation Rate Test in the Prognosis of Tuberculosis J. Fine and D. M. Dunlop—p. 201
- Pathologic Changes in Carotid Sinus and Their Relation to Hypertension C. A. Heale—p. 213
- Electrocardiogram in Syphilis: An Examination of Two Hundred and Thirty-Two Cases of Syphilis and One Hundred and Fifty-Six Controls E. N. Chamberlain and J. H. Lollows—p. 221
- Renal Dwarfism: Report of Twenty Cases with Especial Reference to Its Association with Certain Dilatations of Urinary Tract A. Ellis and H. Evans—p. 231
- *Precipitin Reactions in the Blood of Rheumatic Patients Following Acute Throat Infections B. Schlesinger and A. G. Signy—p. 255
- *Diabetic Lipemia: Role of the Fats in Diabetes Mellitus with Description of the Hemolipokrit Method for Estimation of Fat in the Blood Serum D. H. Collins—p. 267

Bendien and Sedimentation Tests in Prognosis of Tuberculosis—Fine and Dunlop carried out 151 Bendien tests, most of them simultaneously with a sedimentation test in thirty-six cases of pulmonary tuberculosis. In most of them the blood was examined from five to ten times. The results reveal a high degree of correspondence between (1) the Bendien and the sedimentation tests, (2) the clinical course and the prognosis and the prognostic tests. While there is no reason to believe the Bendien test either more or less accurate than the sedimentation rate, it has the following advantages: 1. It is a serum test, and therefore more convenient. 2. It does not show so readily minor fluctuations, and therefore its variations are more significant. It has the disadvantage of requiring two very accurately prepared reagents. In the preparation of the acetic acid solution an error of tenth normal \times (± 0.005) causes a displacement in the result by one tube. Sodium vanadate varies in the amount of water of crystallization, and the tenth normal solution can therefore be safely prepared only by obtaining the weight of the anhydrous salt. The Bendien chemical test is a useful prognostic test in pulmonary tuberculosis and probably in other conditions in which the sedimentation rate has been found useful. It may safely be adopted as an alternative prognostic test when the sedimentation rate is impracticable.

Precipitin Reactions in Rheumatic Patients—Schlesinger and Signy state that streptococcus precipitins can be demonstrated in the blood of rheumatic patients following acute streptococcal throat infections. The group of cases in which the investigations were carried out consists of seventeen rheumatic and four nonrheumatic children. The formation of precipitins is delayed until the second to fourth week from the onset of the nasopharyngeal infection (the end of the silent period), and their appearance in most cases foreshadows a tendency to a relapse of acute rheumatism. The precipitin corresponds to the type of streptococcus responsible for the throat infection, but a certain amount of cross precipitin formation may occur. The formation of precipitin is regarded as one of the manifold reactions that take place in the patient's defense mechanism during the silent period. There is thus time for prophylactic measures if the throat infection has not passed unnoticed. Concentrated acetylsalicylic acid therapy during this period undoubtedly prevents serious relapses in many cases. The technique adopted for the precipitin test was modified so as to make the best use of small amounts of serum. The antigen used was that described by Collis. It consists of a filtered saline emulsion of ground streptococci. Standard dilutions of the patients' serum to be tested were made. In the early part of the work a 1:10 dilution was used, but later it was found that a 1:5 dilution gave better results. One cubic centimeter of this serum was put up against 1 cc of falling dilutions of the antigen: 1:5, 1:10, 1:20 and 1:40. Dilutions were at first made both with physiologic solution of sodium chloride and with a 0.2 per cent solution of sodium chloride, but, as no differences were noted, physiologic solution of sodium chloride only was used in the later tests. The results were usually definite after an incubation of twelve hours in a water bath kept at 37° C. A control tube of serum and saline solution was always used and occasionally showed turbidity after incubation. When this occurred, the serum was discarded as unsuitable for the test. The positive reactions were never heavy precipitates. A flocculent deposit with a clouding of the supernatant fluid was taken to denote a strong positive reaction, while a mere clouding with or without a slight deposit in one or two tubes was read as a weak positive reaction, provided always the control tube remained clear. Reactions were more frequently observed in the tubes containing the more concentrated antigen and never showed a zone phenomenon.

Diabetic Lipemia—Collins recommends describes and discusses Ruckert's hemolipokrit method for the volumetric estimation of fat in blood serum in diabetic lipemia. He records the result of serum fat estimations on 103 diabetic and fifty-five nondiabetic blood samples. Increase of the serum fats is associated with the presence of glycosuria and acetonuria and with the clinically severer cases of diabetes in particular. No clear relationship could be established between the serum fat and the blood sugar level. There was no relation between the serum fat and the weight of the body of the patient. The author discusses a case of diabetes with hyperthyroidism and suggests the value of a serum fat determination as an aid to diagnosis. He expresses the opinion that the lipemia of diabetes is solely dependent on the inhibition of carbohydrate metabolism and that the increased amount of fat in the blood is evidence of a mobilization of fat in response to the caloric requirements of the body.

Chinese Medical Journal, Shanghai

47 637-734 (July) 1933

- Some Problems in Pathology of Nontuberculous Infections of Urinary Tract with Consideration of Some Modern Methods of Investigation and Treatment J. Gray—p. 637
- Chinese Infants and Children: Study of Infant and Child Mortality Size of Family and Sex Ratio in Two Thousand Five Hundred Cases P. L. Fan—p. 652
- Electrocardiographic Changes in Cholera C. W. Bien and C. L. Tung—p. 662
- Few Cases of Septicemia F. F. Tang—p. 666
- Epignathous Teratoma Note I. C. Wen—p. 674
- Practical Survey of Rural Health C. C. Chen—p. 680
- Prevalence of Malaria in Mausolean District in Nanking Preliminary Survey W. L. Chiang and C. S. Yang—p. 689
- The Mission Hospitals in China J. L. Maxwell—p. 694
- Rare Case of Twin Pregnancy S. W. Lee—p. 697

Presse Medicale, Paris

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- Evolution of Nervous Arthropathies T Alajouanine and G Mauric — p 1537
- Scoliotic Paraplegia. Andre Thomas E Sorrel and Mme. Sorrel Dejerine — p 1542
- Epitheliomas of Eyelids Simone Laborde — p 1548
- *Spondylolysis Its Causes and Consequences C Roederer and P Glorieux — p 1550
- Roentgenographic Observation of Movements of Folds of Mucosa of Large Intestine S Kadrnka and R. Audeoud — p 1553
- *Role of Normal and Supernumerary Interlobar Fissures in Development of Parenchymatous Forms of Pulmonary Tuberculosis J Stephani and R Kirsch — p 1558

Spondylolysis Its Causes and Consequences —

Roederer and Glorieux define spondylolysis as a unilateral or bilateral interruption in the continuity of the posterior vertebral arc passing between the superior and inferior articular processes. While the lesion may sometimes be demonstrated roentgenographically in front exposures and, rarely, in profile exposures, it is always demonstrable in three quarter exposures although several exposures may be required. It may present itself as a real interruption of continuity, but more often it is merely an unhooking or lack of alinement in the trabeculation. In the authors' opinion spondylolysis may often be congenital, but it is also frequently produced by trauma. In traumatic spondylolysis the mechanism is as follows. At first there is a hyperextension of the spine with the center of the intervertebral disk serving as the axis, the extension continues with the inferior articular process of the fifth lumbar vertebra and the superior process of the first sacral vertebra, for example, serving as axis, finally the articular processes touch, blocking extension, so that, if the movement is accentuated, the isthmus of the fifth lumbar vertebra (the point of least resistance) breaks. The authors have found these lesions in 40 per cent of patients complaining of incapacity for effort after a trauma with hyperextension. Spondylolysis plays an important part in the production of spondylolisthesis and precedes or accompanies it in practically all cases. A spondylolysis, whether congenital or acquired, may give rise to pains of static origin. The fibrous tissue, which joins the fragments forcibly subjected to violent traction, may be stretched on one or both sides and permit a slipping with or without rotation of the entire upper part of the spinal column. The permanent muscular effort needed to diminish this abnormal mobility and the contraction which develops may cause pain. Certain severe scolioses starting in the inferior lumbar region result from a spondylolysis with a slight slipping which has been corrected by a rotation of the spinal column. The authors have seen cases of slight scoliosis in young persons with a bilateral spondylolysis, having relaxed on one side, some of them could be reduced by simple dorsal decubitus. The deformity can be discovered by roentgenography of the patient in an upright position with a weight on his shoulders.

Rôle of Interlobar Fissures in Development of Tuberculosis —

Stephani and Kirsch state that interlobar fissures play an important part in the formation of tuberculous foci in the lung. Owing to the wide variety in the forms of fissures and the frequent existence of supernumerary fissures no region of the pulmonary parenchyma is far removed from a fissure. From a study of 2000 roentgenograms of the lungs often supplemented by transverse exposures the authors conclude that there are few apparently isolated foci (whether early infiltrations or small metastatic foci) which are not found to be justafissural when studied in anterior and transverse roentgenograms. For a focus to appear isolated in the parenchyma when it is actually justafissural it suffices that the segment of the fissure on which it is located is not contained in the plane of the ray that strikes it; this is evidently frequent. From the clinical standpoint interlobar propagation is important in the genesis of foci of consolidation of the parenchyma. This explains their sudden formation, their liquidity and the fact that they invade from the start the whole of an apparently healthy lobe. Many parenchymatous foci develop rapidly because their formation is prepared by interlobar action and roentgenograms taken at various angles will show that this mechanism is perhaps more frequent than is recognized.

Archivio di Patologia e Clinica Medica, Bologna

13 113 220 (Sept) 1933

- *Artificial Pneumothorax in Treatment of Pulmonary Echinococcosis G Scaglia — p 126
- Occlusion of Inferior Vena Cava. E Samek — p 170

Artificial Pneumothorax in Treatment of Pulmonary Echinococcosis — Scaglia states that the primary necessity in treating echinococcosis of the lung is to determine the site of the cysts in the respiratory parenchyma and to exclude from treatment the parapleural cysts which the pneumothorax might break into the pleural cavity at their point of least resistance. Positive endopleural pressure can give more rapid and permanent effects than negative pressure, it avoids the formation of pneumocysts and of suppurative complications, because it determines a rapid collapse of the residual sac and prevents the entrance of the respiratory air column and the germs that it conveys. The pneumothoracic hydatid sac resembles in its general traits the spontaneous sac. Partial pleural adhesions do not constitute an absolute contraindication, because they may be often overcome or they may allow the formation of an efficient pneumothorax. Artificial pneumothorax is inefficient if the membrane of the cysts is thickened, sclerotic and infiltrated with lime. If artificial pneumothorax is unsuccessful, surgical intervention must follow. The author does not believe that secondary bronchogenous echinococcosis of the lungs is capable of unfavorably influencing the application of the collapse therapy in pulmonary echinococcosis.

Actas de la Sociedad de Cirugia de Madrid

2 127 222 (April June) 1933 Partial Index

- Correction of Coxa Vara by Transposition of Trochanter Case T Rodriguez de Mata — p 127
- Causes of Failure in Osteosynthesis and Review of Modern Techniques J D Harcourt and M D Harcourt — p 137
- Transient Total Amaurosis Following Intraspinal Injection of Iodized Poppy Seed Oil Case T Rodriguez de Mata — p 165
- *New Technic for Volumetric Determination of Whole Amount of Blood in Human Body V Sanchis Perpina — p 169
- Congenital Lipoma of Carotid Region Case M Gonzalez Ralero — p 181
- Surgical Therapy in Tuberculosis of Female Genitalia L Soler — p 187
- Diagnosis and Surgical Therapy of Extramedullary Intradural Tumors J Goyanes — p 199

Technic for Determining Amount of Blood in Body —

Sanchis Perpina's original technic of determining volumetrically the total quantity of blood in the human body is as follows. One 5 cc and two 10 cc syringes are sterilized and dried. The 5 cc. syringe is filled with a 1 per cent solution of congo red to which 0.5 Gm of sodium salicylate has been added. With one of the other syringes 10 cc of blood is withdrawn from the vein of the patient's arm and the 5 cc of congo red solution is then injected through the same needle. The normal blood thus withdrawn is placed in a 10 cc test tube graduated in cubic centimeters. After five minutes, 10 cc of blood is withdrawn from the vein of the other arm with the remaining syringe. This blood is placed in a non graduated 10 cc test tube. The two test tubes are centrifugated for one hour and the quantity of corpuscles and serum in the test tube containing the normal blood noted. Then 0.25 cc of serum of the normal and of the dyed blood respectively are withdrawn with different pipets and placed in two different small tubes. These small tubes are of a special type. The closed end is a cylinder of 0.5 cc capacity graduated into hundredths of a cubic centimeter, and the open end is conical and has a capacity of 3 cc. To both serums a 2.5 per cent solution of uranium nitrate is added and then each tube is stirred with a different fine glass rod. Both tubes are centrifugated for fifteen minutes. A precipitate is formed in each tube. The negative difference in hundredths of a cubic centimeter between the precipitate in the dyed serum and that in the normal serum respectively, is the equivalent of the total amount of serum in the body. By previous experiments the author has determined that the negative difference between the height of the precipitate in the tube with dyed and normal serums represents the following equivalents: 0.02 cc is equivalent to 5000 cc of serum, 0.03 to 4500, 0.04 to 4000, 0.05 to 3500, 0.06 to 3000, 0.07 to 2500, 0.08 to 2000, 0.09 to 1500 and 0.10 to 1000. To determine the quantity of corpuscle in the whole blood the quantity of

corpuscles in the test tube of normal blood is taken as a basis and a proportion is made between the quantity of serum and corpuscles in 10 cc of normal blood and the quantity of total serum (already determined) and corpuscles (undetermined). For example, the 10 cc test tube of normal blood of a patient gave, after centrifugation, a volume of 6 cc of serum and 4 cc of corpuscles. In the second tubes there was a negative difference of 0.07 between the precipitate of the dyed serum and that of the normal serum. As this negative difference corresponds to 2,500 cc of serum the following proportion results: $6.4 : 2,500 :: 6.4 : 2,500, 1,666$. By adding the two large figures representing the total quantities of serum and of corpuscles, respectively, one obtains the number that indicates the total quantity of blood in the human body. For example in the case mentioned 2,500 cc of serum and 1,666 cc of corpuscles give a total amount of 4,166 cc of blood. This volumetric method possesses great precision and the author considers it better than the colorimetric methods used for the same purpose.

Archiv für klinische Chirurgie, Berlin

176 401 620 (Sept 30) 1933

- *Inflammation A Bier—p 407
- *Results of Atypical Blunt Injuries of Knee Joint E Payr—p 550
- Teaching Experience of a Surgical Clinician E Payr—p 559
- Advances in Neurosurgery F Sauerbruch—p 568
- Puncture and Electrocoagulation of Gasserian Ganglion Kirschner—p 581

Inflammation—In an extensive article on inflammation contributed on the occasion of Werner Korte's eightieth birthday, Bier reviews the important landmarks in the history of knowledge of the subject. The author's special contribution to the subject is the application of hyperemia induced by hot air, constriction with elastic bandages or the use of a suction apparatus (Bier's hyperemia). The inflammatory reaction and the accompanying fever are favorable symptoms and are not to be combated. The successful treatment of the extremely painful gonorrheal joint by congestion hyperemia demonstrates the fallacy of the theory that the pain of inflammation is occasioned by hyperemia. The author advocates the use of various irritating agents, especially of foreign blood, to induce therapeutic fever and to stimulate the defense mechanism of the body. The gravest phlegmon can be closed after incision and cauterization with a hot iron. The acute inflammation and the fluids produced by the cautery produce an immunizing effect. Some of the minor practical applications of hyperemia treatment are the preservation of tendons in purulent tenosynovitis by making small incisions into the sheath and the use of a small incision in the treatment of suppurative inflammation of a lactating breast in combination with suction hyperemia. It has become evident that picking of the wound and frequent changes of dressings are injurious. In the treatment of gonorrheal and tuberculous joints, moderate motion has been substituted for total immobilization. The author stresses the value of blood transfusion. It is to be considered more than a replacement therapy, because it is capable of stimulating the hematopoietic as well as the defense mechanisms. For the latter purpose foreign blood is just as valuable. The author refers to the good results obtained by him in the treatment of patients with tuberculous, thyrotoxic and vascular disease with injections of small amounts of foreign blood.

Atypical Blunt Injuries of Knee Joint—Payr emphasizes the great importance of chronic traumatic synovitis as the result of a blunt injury. He is not concerned here with the "classic" types of injury, such as tears of the meniscus and of the crucial and lateral ligaments, and the splitting off of a piece of cartilage. The injuries under consideration are the bruising and tearing of the synovial lining, of the fibrous capsule and of the fat bodies of the joint. Effusion of blood and local necrosis are the immediate result. These cause irritation of the joint and spasm of the muscles. The latter leads to contracture of the quadriceps group or of the extensor group of muscles. The bruising of the lateral ligaments results, as a rule, in the contracture of the flexors, while injury to the posterior wall of the suprapatellar fat pad leads to a contracture of the extensors. The hypertrophic type of chronic synovitis leads to a shrinking of the fat pads but not unfrequently to a lipoma like proliferation, 'lipoma arborescens' traumaticum," characterized by locking of the joint. Too active use of the joint frequently leads to chronic effusion, but the dry shrinking form of synovitis is even worse. Filling of the joint with a solution of procaine hydrochloride epinephrine and flooding of the hypertonic muscles with a solution of procaine hydrochloride alone proved of value in the treatment. Addition of camphorated phenol is useful in some cases. Particularly good results were obtained with high voltage roentgen therapy as well as with short ray therapy. Careful exercise of muscles with interrupted current, massage, motion and movement of the patella are indicated. The cases that do not respond to treatment require surgical intervention. The author points out that the much favored removal of a meniscus will not cure the jamming by a fat pad, hygroma of the mucous membrane or tears of the extensor muscles. A search for the real offending cause must be made in the absence of typical lesions.

Beiträge zur Klinik der Tuberkulose, Berlin
S. 377-514 (Sept 23) 1933

- Experimental Investigations on Manner of Infection and Pathologic Anatomy of Tuberculosis in Monkeys Y Nakada—p 37
- Relations Between Tuberculous Primary Infection and Tuberculous Disease During School Age H J Ustvedt—p 402
- Pathogenic Requirements of Pulmonary Tuberculosis in Adults H Kutscher, Archberger and A Makira—p 405
- *Gastrocardiac Syndrome in Phrenic Exeresis of Left Side. L Roemheld—p 420
- Coagulation Time of Blood in Course of Pulmonary Tuberculosis I D Hrdzemann—p 428
- Phosphatase of Blood in Tuberculosis of Bones B Koldajew and M Altshuler—p 433
- Observations on Differences in Form of Tubercle Bacilli Bernstein—p 437
- Cultivation of Tubercle Bacilli from Exudates of Pleurisy and of Pneumothorax Y Oshima, Riss, Suzuki and K Suzuki—p 441
- Influence of Tissue Juice of Muscles and of Thyroid on Tubercle Bacilli H Feurig—p 452
- *Treatment of Pulmonary Tuberculosis with Iron-Copper-Chlorophyll Compound F Mattausch—p 463
- Alteration Experiments with Basic Mineral Mixture in Chronic Pulmonary Tuberculosis F Mattausch—p 467
- Investigations on Minute Volume of Heart in Two Cases of Unilateral Artificial Pneumothorax G Nylin—p 470
- Bilateral Spontaneous Pneumothorax in Silicosis A Abraham—p 478
- Spontaneous Pneumothorax in Silicosis A Hofbauer—p 486
- Pathogenesis of Bronchiectases M Kartagener—p 489
- Determination of Residual Air A J Anthony—p 507
- Hospitalization of Patients with Open Pulmonary Tuberculosis Formerly and Now K W Jotten—p 511

Gastrocardiac Syndrome in Phrenic Exeresis—Roemheld states that of 143 patients who underwent phrenic exeresis of the left side seventeen developed the characteristic gastrocardiac syndrome, manifested partly as gastric disturbances and partly as cardiac disorders (tachycardia, extrasystole or anginal pains). However these symptoms were only subjective and the chemical and roentgenologic examination of the stomach, as well as the electrocardiographic and roentgenologic examination of the heart remained negative, if a shifting of the heart toward the right or a turning in case of considerable elevation of the diaphragm are disregarded. The author agrees with Jahnke, who maintains that the symptoms are generally of a temporary nature. He points out that the comparatively low incidence of the gastrocardiac syndrome is probably due to the fact that most of the patients were of the asthenic type for the condition is found primarily and in its severest form in pyknic persons. Other factors that play a part in the pathogenesis of the gastrocardiac syndrome are neurasthenia and vasomotor irritability which become manifest in sweating, erythroderma and dermatographism. The author concludes from these observations that phrenic exeresis of the left side may be done without danger in asthenic persons with normal circulatory and digestive organs. However, caution is necessary in persons of the pyknic type or in patients having cardiac and gastric disturbances or a weak sympathetic nervous system. The physician should realize that in these cases exeresis on the left side may cause severe disturbances, and he should not resort to it unless other therapeutic measures, particularly pneumothorax, have failed.

Treatment of Tuberculosis with Iron-Copper-Chlorophyll Compound—Mattausch employed an oil soluble copper chlorophyll compound activated by small quantities of iron, administered in keratin capsules in the treatment of 218

patients with mild or average chronic pulmonary tuberculosis. Each capsule contains 0.1 mg of copper, 1 mg of iron and 18 mg of chlorophyll, all constituents being in the lipid-soluble form. The daily dosage is as a rule three capsules, one after each of the principal meals. This medication is continued for from ten to twelve weeks, interrupted for from eight to twelve weeks, and resumed again for from two to three months. In some cases a second and third period of medication may follow after the usual interruptions. A noticeable change in the reaction of the organism, that is, a reduction of the increased sensitivity and a change toward an increased resistance, a desensibilization, became noticeable in approximately 70 per cent of the cases after the first few weeks of treatment. This alteration is characterized by a decrease or cessation of the toxic processes, by a change from the neutrophilic to the lymphocytic tendency of the white blood picture usually by way of a monocytic intermediate phase, by a decrease in an eventually existing acceleration of the sedimentation speed of the erythrocytes, by a gradual disappearance of the increased metabolic rate and by an increase in the alkali reserve of the organism, when during the stage of increased irritability a shifting toward acidity has taken place. It may be expected that all these changes in reaction are accompanied by changes in the sympathetic nervous system, from the sympathicotonic to the parasympathicotonic. The patients feel better, new focal infiltrative processes begin to disappear, the erythrocyte and hemoglobin values increase, and the patients gain weight.

Deutsche medizinische Wochenschrift, Leipzig

59 1499 1522 (Sept. 29) 1933

- Heredity and Tumor Formation. B. Fischer-Wasels—p. 1499
Chemotherapy of Carcinomas. O. Schürch—p. 1494
Tumor Destruction by Ultrashort Waves. T. Reiter—p. 1497
Campaign Against Cancer in National Socialist State. F. Grunewald—p. 1498
Campaign Against Cancer in Fascist Italy. G. A. Chiurco—p. 1499
Statistics on Cancer in Switzerland. F. Grunewald—p. 1502
Ego and Environment in Illness. V. von Weizsäcker—p. 1503
Subserous Cystectomy and Management of Cystic Duct. M. Kemal—p. 1505
Paradoxical Gonadotherapy. E. Klar—p. 1507
Fighting Inflammation in Oral and Pharyngeal Cavity. J. Berberich—p. 1508
Psychosomatic Treatment of Asthma. P. Engelen—p. 1508
Treatment of Dysmenorrhea. W. Benthin—p. 1509

Tumor Destruction by Ultrashort Waves.—Reiter shows that the ultrashort waves capable of destroying tumors are those of wavelengths between 3 and 4 meters. Metabolic tests on tumor cells following exposure to ultrashort waves disclosed that the metabolism is inhibited. Comparative tests on tumors treated with roentgen rays revealed that enormous doses of roentgen rays are required to produce the effects given by ultrashort waves. The author thinks that the inhibition of the metabolic processes effected by the ultrashort waves is alone sufficient to explain the destructive action on tumor cells, but whether it is the only cause or whether the rays produce still other impairments cannot be decided on the basis of the studies carried on thus far. He expresses the opinion that the effects produced by the ultrashort waves hold promise that this therapy may prove helpful in the treatment of malignant tumors in human beings.

Paradoxical Gonadotherapy.—Klar points out that, since the researches of Puly, Laqueur, Petterson and others, the theory of the paradoxical gonadotherapy has been almost universally accepted. Starting from the fact that both hormones are present in the male and female organisms in different quantitative ratios, an attempt has been made to test the influence of these hormones in their reciprocal proportion. It was found that the female sex hormone exerts a noticeable influence on the appendages of the skin in both males and females. Whether this action of the female hormone is a direct one or whether it exerts its influence by stimulating the formation of a testicular hormone has not been proved as yet. The author reports the history of a man aged 28 who as the result of an endocrine disorder lost all hair of the head, beard, eyebrows, axilla and pubic region. It was decided to try treatment with an estrogen. After several days the patient was given an injection of 1 cc (50 m. c. u.) of the hormone.

The treatment was continued for four and one-half weeks until a total of 17 cc of the hormone had been administered. After the fourth injection the beard started to grow. Hair appeared on the head a little later but, compared to the beard, it was rather scanty and of irregular, somewhat focal distribution. Simultaneously with the hair of the head, the eyebrows grew again. Their growth started on the external portion, but the hair of the median third had not yet appeared when hormone injections were discontinued. Axillar and pubic hair did not grow again. The author points out that this one case does not permit general conclusions.

59 1523 1558 (Oct. 6) 1933

- Modern Methods of Diagnosis and Treatment of Sterility in Women. G. Haselhorst—p. 1523
Technic of Sterilization in Men. H. Boeminghaus—p. 1527
Determination of Families with Hereditary Deficiencies. C. von Leopoldt—p. 1528
Psychoses in Cerebral Processes and in Epilepsy. K. Schneider—p. 1530
Clinical Experiences on Treatment of Dyspepsias. W. Dubberstein and H. Karp—p. 1533
Spontaneous Perforation of Rectum in Lymphogranuloma Inguinale. K. Schulz—p. 1535
Utilization of Autodisintegrating Processes in Animal Organism for Practical Therapy. B. Dikomeit—p. 1535
Nursing Mortality and Social Status. A. Hoffbauer—p. 1536
Papillary Disturbances and Duration of Life. Heine—p. 1538

Diagnosis and Treatment of Sterility in Women.—Haselhorst describes observations indicating that the uterus plays an important part in the transportation of spermatozoa and shows how disturbances in this function of the uterus may be a factor in sterility. He discusses the function of the uterine tubes and their disturbances and evaluates such conditions as genital infantilism and hypoplasia, nervous spastic symptoms, secretory disturbances and obstructions. He considers mechanical obstructions of the tubes one of the most frequent causes of sterility. He estimates the diagnostic value of the insufflation of the uterine tubes and of hysterosalpingography and, in discussing the treatment of mechanical obstructions, he points out that insufflation of the tubes may occasionally have some therapeutic value. He thinks that conservative methods should always be tried first and that only after these have failed should surgical interventions be resorted to. Implantation of the tubes gives better prospects for a subsequent pregnancy than does salpingostomy, for in the first case healthy portions of the tube are generally used whereas in the case of salpingostomy the oviducts are generally diseased. Observations have convinced the author that in general, surgical treatment of sterility is of little avail.

Technic of Sterilization in Men.—Boeminghaus describes a simple method of sterilization. By fixing the deferent duct subcutaneously, one can lay the spermatic cord free by a small incision into the scrotum (from 0.5 to 1 cm. in length). After that the spermatic cord can be drawn forward and a part of it may be resected or the peripheral end may be knotted. Each procedure interrupts the passage completely, whereas a simple ligation with silk thread does not guarantee the interruption. It is still more advisable to suture the peripheral stump into the skin while the central stump is allowed to slip back into the scrotum. The procedure is so simple that only from two to three minutes is required for each side. The author asserts that psychic alterations do not follow this form of sterilization.

Klinische Wochenschrift, Berlin

12 1513 1522 (Sept. 30) 1933

- Role of Liver in Cholesterol and Phosphatide Metabolism. H. Heinlein—p. 1513
Minute Volume of Heart in Various Types of Baths. C. Kroetz and R. Wachter—p. 1517
Causal Processes in Attacks of Angina Pectoris. F. Munk—p. 1520
Immunizations with Purified Organ Specific Bacteria of Brain. H. Ruly—p. 1521
Pathogenesis of Experimental Acute and Chronic Glomerulonephritis. Experimental Albuminuria of Certain Drugs (Inorganic Fluorophosphate). H. Harnack—p. 1523
Sequence of Interferon Secretion in Virus Infection. F. Burghard and H. Schick—p. 1525
Hypertension After Stereotaxis Hemorrhagic Infarct. M. Seifert—p. 1529
Symptoms of Examination of Gastric Contents in Diagnosis of Duodenal Ulcer. C. C. Tamm—p. 1531
Fishes of the Caspian Sea. N. Hennig and J. Neukirch—p. 1533

- Reflex Self Adjustment of Circulation in Aortic Insufficiency K. Schneyer—p 1532
Action of Light on Chemistry of Cell under Influence of Sensibilizers J. Wohlgemuth and E. Szoranyi—p 1533
Involvement of Central Nervous System in Course of First Vaccination E. Holzmann—p 1534

Sequels of Icterus Neonatorum Gravis—Burghard and Schleussing call attention to the important literature on icterus neonatorum gravis, particularly to contributions describing a yellow discoloration of some regions of the brain, and they report a case of their own observation. The child died at the age of 5 months. The icterus had largely disappeared on the eleventh day of life, but after that there developed a somewhat "encephalic" symptomatology (opisthotonos, dulled senses, profuse perspiration, parkinsonism). The authors assumed changes in the region of the sympathetic centers particularly in the subthalamus, and the histologic changes found corroborated the symptoms to a considerable extent. They accept the theory expressed by other investigators that a bilious saturation of certain portions of the brain is the cause of these changes but whether the bilious saturation is preceded by other changes or whether the saturation itself represents the impairment cannot be decided. They conclude that only under exceptional circumstances and only when vital centers of the brain have been spared is there hope for recovery from icterus neonatorum gravis. They think that the fatal outcome is not to be deplored too much when it is considered that irreparable changes in the brain may be expected, which will make a normal development impossible and which after chronic sickness with paralysis and idiocy will finally end in death.

Hyperglobulia After Splenectomy in Hemolytic Icterus—Netousek points out that hyperglobulia is a sequel of splenectomy has been known longest in pernicious anemia but that, because splenectomy is now rarely performed in these cases, the hyperglobulia that follows splenectomy has lost its importance in pernicious anemia and belongs now primarily to the splenogenic anemias. In hemolytic icterus the results of splenectomy are generally favorable, but hyperglobulia may follow the splenectomy. The author reports a case in which the first signs of hyperglobulia appeared six months after splenectomy. Medication with phenylhydrazine counteracted the hyperglobulia and changed it into a hemolytic anemia. The author points out that experiments have proved that hemolyzing toxins may also produce hyperglobulia.

12 1553 1592 (Oct 7) 1933

- Newer Theories on Functional Disturbances of Hypophysis J. Bruer—p 1553
*Treatment of Amenorrhea with Large Doses of Ovarian Hormone C. Kaufmann—p 1557
Influence of Nutrition on Hydrogen Ion Concentration of Bile H. Bronner—p 1562
Differentiation Between Exophthalmic Goiter and Hyperthyroidism C. V. McVey—p 1563
*Temporary Exclusion of Phrenic Nerve by Procaine Hydrochloride with Simultaneous Testing of Respiratory Function T. Naegeli and A. Heymer—p 1565
Action of High Protein Diet in Nephrosis G. Czernicer and S. Weber—p 1566
*Quantitative Determination of Indican in Blood Without Comparative Solution P. Schlierbach—p 1569
Rice Hygiene and Clinical Medicine T. Lenz—p 1570
Determination of Ammonia in Blood C. Riebeling—p 1572
Remarks on Case of Hypochloremic Uremia H. B. W. Ercklentz—p 1572
Course of Infection and Immunity in New Born and Grown Animals H. Kroo—p 1573
Serologic Diagnosis of Tuberculosis with Aid of Immunity Reaction of Meimcke T. E. Hrag and Agnes Dane—p 1574
Hereditary Physical Deformities and Law for Prevention of Hereditary Disorders H. Eckhardt—p 1575

Treatment of Amenorrhea with Ovarian Hormone—Kaufmann shows that in the absence of ovarian activity it is possible to produce a proliferation of the endometrium by the administration of the follicular hormone, and that if after this the hormone of the corpus luteum is given for a number of days the proliferated uterine mucous membrane is transformed into the secretory phase, so that menstruation sets in. It was found that the doses must be quite large in order to be effective. At first, women suffering from amenorrhea were given daily injections of 10,000 mouse units of the follicular hormone for three weeks, so that the total dosage for one menstruation was about 200,000 mouse units. Later it became possible to

administer 50,000 mouse units twice a week with a perfected preparation that allowed the organism to absorb the large quantities of hormones gradually. After the follicular hormone had been administered in sufficient quantities, the hormone of the corpus luteum was given for a period of five days. The total doses varied between 25 and 50 rabbit units. The author found that secondary amenorrhea can be counteracted some times with follicular hormone alone, but sometimes both hormones are required. He thinks that in these cases the ovaries are influenced by way of the hypophysis. In women having a hypoplastic uterus the follicular hormone alone often effects a considerable growth of underdeveloped genitalia. So far it has not been possible to counteract primary amenorrhea permanently in women having genital hypoplasia or normally developed genitalia. However, the fact that proliferation and secretion of the endometrium can be produced artificially justifies the hope that by prolonged treatment cooperation of the endocrine organs may be realized eventually.

Temporary Exclusion of Phrenic Nerve—Since phrenic exeresis is frequently followed by severe complications, particularly respiratory insufficiency, Naegeli and Heymer recommend temporary exclusion, in the course of which respiratory tests can be made. They induce the temporary exclusion by means of anesthetization with a 1 per cent solution of procaine hydrochloride. The result is paralysis of the respective half of the diaphragm for from three-fourths to two and one half hours. During this time the diaphragmatic action and position are observed by roentgenoscopy and the respiratory function is tested by the determination of the vital capacity with the dry spirometer and of the duration of the voluntary respiratory pause. If roentgenoscopy discloses a considerable elevation of the diaphragm and if the respiratory tests do not indicate too great a reduction of the respiratory function, it can be concluded with considerable certainty that exeresis will not involve dangers for the patient. However, if the respiratory values become considerably impaired during the temporary exclusion, complications must be expected and, if there is great impairment without considerable diaphragmatic elevation, phrenic exeresis involves great danger and is therefore contraindicated.

Determination of Indican in Blood—Schlierbach describes a new method for the quantitative determination of indican in the blood serum. The indican content is found with the aid of Pulfrich's step photometer, and the values thus detected may eventually be controlled by means of Lange's electric light colorimeter. The advantage of this test is that it does away with the use of photosensitive comparative solutions.

Münchener medizinische Wochenschrift, Munich

80 1497 1534 (Sept 29) 1933

- Roentgenokymogram of Renal Pelvis and of Ureters G. Holland and G. Sack and G. Wullenweber—p 1497
Development of Acute Appendicitis Following Trauma and in Course of Other Disturbances O. Hoche—p 1499
*Paralysis of Brachial Plexus Following Prophylactic Injection of Tetanus Serum and of Diphtheria Serum H. Demme—p 1502
Pathology and Therapy of Syphilitic Aortitis H. Liebig—p 1503
Economy Efficacy and Practicality of New Preparations in Treatment of Pernicious Anemia Martha Frank—p 1506
Auscultatory Diagnosis of Apical Cavities E. Volhard—p 1509
Must the Physician Be Capable of Determining Penetration of Foreign Body into Eye? L. Heine—p 1511
*New Rapid Pregnancy Reaction R. Bruhl and K. Hollstem—p 1512

Paralysis Following Prophylactic Serum Injection—Demme reports one case of bilateral shoulder and arm paralysis following prophylactic injection of tetanus antitoxin, and a similar condition that developed after injection of diphtheria antitoxin. He calls attention to other reports in the literature. That paralytic manifestations have developed following injections of various serums militates against the assumption that the antitoxin as such is the injurious factor, and the author is inclined to agree with other investigators who assume that the paralytic manifestations are a form of anaphylactic reaction of the nervous system to the parenteral administration of heterogenous serums. This theory is also borne out by the fact that the neuritic manifestations are nearly always preceded by a typical serum exanthem. It is surprising that independent of the site of the serum injection (in the reported case in the buttock) the paralysis usually involves the region of the brachial plexus and the muscles of the shoulders and arms.

Whether this is due to a particular affinity or to other factors has not been determined as yet. The prognosis of the paralytic symptoms is favorable, for they gradually disappear again. The author emphasizes that these comparatively rare complications are no contraindication to serotherapy.

New Rapid Pregnancy Reaction—Brühl and Hollstein employed the rapid pregnancy reaction of Hirsh-Hoffmann on the urines of sixty-nine women forty-seven of whom were pregnant. The test failed in only two cases, in which the test animals were too old and large (30 Gm). The authors use virginal mice that are at the beginning of sexual maturity and weigh from 12 to 15 Gm. At least two animals should be used for each test. The urine is injected in three doses of 12 cc each (in the course of twenty-four hours) under the skin of the back. After forty hours the animals are killed, and the ovaries are embedded and sectioned. If the first injection of urine is made in the afternoon, the test is completed in the morning of the second succeeding day. A positive reaction is characterized by the following microscopic changes: (1) follicle cysts with beginning luteinization, (2) corpus luteum cysts, (3) luteinization of the theca of the atretic follicles and of the interstitial tissues, and (4) blood dots in larger numbers.

SO 1535 1576 (Oct 6) 1933

- *Indications of Dangers to Fetal Life During Delivery. A. Mayer — p 1535
Leukorrhea and Its Treatment. R. Spiegler — p 1536
Progress in Treatment of Leukorrhea. Trichomonas Colpitis. R. Koelsch and G. Tsutsulopulos — p 1538
Syphilis and Obstetrics. Problems of Obstetrician in Campaign Against Congenital Syphilis. E. Philipp and W. Richter — p 1540
*Relation Between Helminthiasis and Gynecologic Disorders. K. Mahler — p 1543
Therapeutic Results in Sarcoma of Uterus. H. Reichenmüller — p 1545
End of Schultz's Swinging Method in Treatment of Asphyxia Neonatorum. H. Cramer — p 1546
Anesthesia with a Sodium Salt of a Barbituric Acid Derivative. C. Holtermann — p 1547
Anesthesia in Obstetrics in the Home. B. Tausch — p 1550
Effective Campaign Against Cancer. Lönne — p 1551
Cerebral Circulatory Disturbances of an Organic Nature. F. Höller — p 1553
Practicability of Colorimetric Determination of Blood Sugar According to Creelius Seifert. G. Sommerlad — p 1557

Indications of Dangers to Fetal Life—Mayer discusses two of the signs which indicate that the life of the fetus is in danger: the retardation of the fetal heart tones and the discharge of meconium. According to Sachs, a living child cannot be expected when retardation to a frequency of less than 100 persists for more than forty minutes. The author concedes that this may be true generally but cites a case in which retardation of the fetal heart tones persisted for several hours and a viable infant was finally delivered. He discusses the various factors that may lead to retardation of the fetal heart tones, particularly cerebral pressure and intracranial hemorrhage. In case of increased cerebral pressure he considers the use of the forceps advisable only when it hastens and facilitates delivery. If the use of the forceps requires considerable time and pressure it may even increase the danger. The author states that most practitioners consider the discharge of meconium a sign of danger and, as a result, often resort prematurely to the use of the forceps. He asserts that greenish amniotic fluid with fine floccules is occasionally observed at the beginning of labor and a viable infant is delivered several hours later. He thinks that the discharge of meconium in the form of a discoloration of the amniotic fluid is by itself of relatively slight importance. It is more dangerous when it concurs with a disturbance of the heart tones or with an infection of the uterus. It cannot be denied that the discharge of fresh clots of meconium is a rather grave sign but it is difficult to differentiate between freshly discharged meconium and the meconium of gestation because it is impossible to say how rapidly the amniotic fluid dissolves the meconium and the absence of clots does not necessarily exclude the fresh discharge of meconium. At any rate the author agrees with Seitz who maintains that the discharge of meconium alone is no indication for an operative intervention. He reaches the conclusion that it may be extremely difficult to recognize when the life of the fetus is in danger. He thinks that the danger is generally overestimated and that delivery by forceps is done too often. The result is a higher percentage of injured mothers and a dead child.

Helminthiasis and Gynecologic Disorders—Mahler thinks that infestation with intestinal parasites is not given the necessary consideration in gynecologic disorders. He points out that intestinal parasites may cause such disorders as salpingitis, appendicitis, pelviperitonitis, cholecystitis, abscess of the liver, diffuse peritonitis and necrosis of the pancreas. The behavior of *Ascaris*, *Trichocephalus* and *Oxyuris* makes it understandable that they may lead to such manifestations. Complications following obstetric or gynecologic operations also may be caused by helminths, particularly by ascarides. Nervous symptoms may be caused by helminths, and clubbed fingers, articular swellings and edemas have been observed. The author thinks it probable that some intestinal parasites produce toxins that influence the blood and the nervous system. Moreover, helminthic toxins may act on the endocrine system and thus may involve the gynecologic sphere. The diagnosis of helminthiasis can be based only on the examination of the stools. Eosinophilia cannot always be relied on. The author thinks that helminths should be searched for in refractory abdominal symptoms, for he is convinced that their detection and removal will bring relief in many such cases.

Wiener klinische Wochenschrift, Vienna

46 1185 1216 (Oct 6) 1933

- Balneologic and Physical Therapy of Chronic Articular Disturbances. E. Freund — p 1185
One Hundred Years of Research on Ganglion Cells. M. de Crinis — p 1188
*Studies on Anemias in Cirrhosis of Liver. K. Fellinger and R. Klima — p 1191
Early Diagnosis of Gastric Carcinoma from Standpoint of General Practitioner. E. Medak — p 1194
*Differential Diagnosis of Aneurysmal Varix of Long Saphenous Vein and of Femoral Hernia. A. Pötel — p 1199
Clinical and Experimental Investigations on Nervous Centers Regulating Metabolism. A. Lohli — p 1200
Surgery of Biliary Tract. Gallstone Ileus. Cholangios. E. Trojan — p 1200
Angina Pectoris. L. Braun — p 1202
Problems of Pulmonary Tuberculosis. R. Wiesner — p 1207
What Rules Apply to the Feeding of the New Born? R. Wagner — p 1207

Anemias in Cirrhosis of Liver—Fellinger and Klima studied the hemograms, particularly the behavior of the erythrocytes, in forty-eight patients having cirrhosis of the liver. They found that fourteen patients had a normal or an almost normal hemogram. Anemia was present in thirty patients (twelve had a subnormal and eighteen a supernormal color index). Four patients had polyglobulism. The high incidence of anemia in patients having cirrhosis of the liver becomes still more evident when incipient cirrhosis is excluded and only completely developed cirrhosis is taken into consideration, for of the fourteen patients presenting a normal hemogram eleven had incipient cirrhosis. Thus it may be said that anemia is almost typical in fully developed cirrhosis and that its appearance is practically independent of eventual hemorrhages. Anemia with increased color index predominates, particularly in completely developed cases of cirrhosis, while a normal or reduced color index is generally found in the incipient stages. Moreover, it has been observed that a slight anemia with normal or subnormal color index in the beginning of the cirrhosis became more severe during its later development and that the color index increased. The morphology and the size of the erythrocytes likewise change, and these changes frequently resemble those that occur in pernicious anemia. The leukocytic hemogram shows a slight leukopenia, particularly in uncomplicated cirrhosis. The author discusses the causal connections between cirrhosis and anemia.

Differential Diagnosis of Aneurysm of Long Saphenous Vein and of Femoral Hernia—Pötel observed three patients presenting an aneurysm of the long saphenous vein in the oval fossa. In all three the condition had been diagnosed elsewhere as femoral hernia. The author points out that Guibral, who studied this problem carefully, came to the conclusion that approximately 50 per cent of the cases of aneurysm of the long saphenous vein in the region of the oval fossa are erroneously diagnosed as femoral hernia. Guibral described the following differentiating symptoms. When the tumor of the oval fossa is pressed lightly and at the same time the abdominal muscular pressure is exerted in several jerks, a humming sound is heard produced by the clashing of the fluid in the

vessel, if an aneurysmal varix exists. This phenomenon is absent in case of femoral hernia. The author resorted to this test in the three cases that came under his observation, it enabled him to diagnose all three as aneurysmal varix, and the operation corroborated the diagnosis.

Zentralblatt für Gynäkologie, Leipzig

57 2353 2400 (Oct 7) 1933

*Hyperemesis and Hypochloremia. H. Kretzschmar—p. 2353
Influence of Age on Course of Delivery in Primiparas. E. Frey—p. 2359

*Agranulocytosis-Like Disorder During Puerperium. A. Heim—p. 2365
*Myoma Praevium with Placenta Praevia Inserted Thereon. B. Ottow—p. 2370

Ascites or Ovarian Cystoma? O. Brakenmann—p. 2376
Lymphangiocystofibromia of Uterus. A. Muschik—p. 2389
Historical Reporting in Gynecology. J. Stur—p. 2397

Hyperemesis and Hypochloremia—Kretzschmar points out that disorders accompanied by frequent attacks of vomiting often lead to hypochloremia and that enteral or parenteral administration of sodium chloride is often helpful in the treatment of these conditions. He reports a case in which a woman who developed hyperemesis gravidarum lost weight rapidly and developed icterus and fever, her pulse rate increased and periods of apathy alternated with periods of excitation. Treatment with insulin and dextrose was ineffective and the discovery of hypochloremia induced the author to administer sodium chloride. From 2 to 3 per cent of sodium chloride was added to the 10 per cent solution of dextrose administered by rectum and a 20 per cent solution of sodium chloride was given intravenously. This treatment was soon followed by considerable improvement and interruption of pregnancy was avoided.

Agranulocytosis-Like Disorder During Puerperium—Heim calls attention to malignant ulcerations of the neck of the uterus which are not of venereal or tuberculous origin. Hematologic studies reveal a connection with severe functional disturbances of the hematopoietic system. After reviewing several cases from the literature, the author reports a case that he observed. It is particularly noteworthy because the woman was in the puerperal stage. Following delivery there was an elevation of temperature. Four days later the patient had difficulty in swallowing. The throat was red and the tonsils were enlarged but not coated. In the left posterior portion of the edematous vagina a discolored painful ulceration was detected. Nosebleed and chills set in. Several days later an aphthous stomatitis had developed on the pharyngeal ring. The tongue was sore and a vesicular eruption appeared along its edge. The gums were swollen and presented ulcerations and partial necroses. A pemphigus-like exanthem appeared on the skin. Examination of the blood disclosed 1,290,000 erythrocytes, 25 per cent of hemoglobin, a color index of 1.2400, leukocytes and the absence of blood platelets. The granulocytes and monocytes showed signs of degeneration. A blood transfusion was given and the condition of the blood improved slightly, but a few days later she died. The author points out that a true agranulocytosis did not exist in this case, because both white and red blood pictures were greatly impaired. In hematology these forms have been referred to as symptomatic agranulocytosis, hemorrhagic aleukemia or pannyelophthisis. The latter can be excluded in the reported case, since it could be demonstrated that the hematopoietic function of the bone marrow was largely preserved. The author thinks that an anemia already existed during pregnancy, although the amniocentesis did not reveal it. He considers the prognosis of cases of this type unfavorable.

Myoma Praevium and Placenta Praevia—Ottow relates the history of a woman, aged 37, who was brought to the clinic on account of hemorrhages in the late stage of pregnancy. On examination it appeared that the pregnancy was at term with transverse presentation and placenta praevia. After a few days of rest in bed the hemorrhages ceased and the woman left the clinic but was readmitted two weeks later when the hemorrhages recurred and slight labor pains set in. On the basis of the diagnosis and because the woman desired a living child at all costs, cesarean section was resorted to and a living child was delivered. A myoma, the size of a child's head, was found on the anterior uterine wall in the region of the isthmus. The myoma was partly loosened from its bed and the placenta was

attached to the capsule of the myoma. One part of the placenta reached into the region, which on account of the interposition of the myoma appeared to be the internal orifice of the uterus. The author shows why a conservative procedure, that is, enucleation of the myoma, was not advisable in this case. A supravaginal amputation was performed, but the right ovary was preserved. Two weeks later, the woman and child were discharged from the hospital. The author describes the probable development of the myoma and the insertion of the placenta on it. He is unable to state definitely whether the hemorrhages were caused by the placenta praevia, by the myoma or by both. He explains when enucleation of the myoma is advisable and when total extirpation of the uterus is preferable.

Norsk Magasin for Lægevidenskapen, Oslo

91 1081 1192 (Oct.) 1933

*Malignant Tumors in Long Bones. Review of Material in Rikshospitalet Surgical Division B from 1913 to 1928. F. Roscher—p. 1081
Pernicious Anemia with Funicular Myelosis as First and Only Grave Symptom. Case. T. Ostrem—p. 1121
Investigations on Friedman's Pregnancy Reaction. T. Leegaard and R. Ringdal—p. 1125

*Spontaneous Pneumothorax in Apparently Well Persons. T. H. Larsen—p. 1130

*Significance of Secondary Infection as Cause of General Infection in Acute and Chronic Gonorrhea. E. Bruusgaard and N. Danbolt—p. 1143

Malignant Tumors in Long Bones—Of the seventeen cases of primary sarcoma treated by Roscher, seven were localized in the humerus. In one of these interscapulothoracic exarticulation was done, in six resection with transplantation of fibula. In one case with extensive periosteal sarcoma in which resection was done, followed by roentgen after treatment, the patient was able to work for thirteen years after the operation. The author concludes that resection is contraindicated when examination or operation reveals infiltration of the soft parts in which case interscapulothoracic exarticulation should be performed immediately. Roentgen after treatment should follow every resection. There were eight cases of primary sarcoma of the femur, out of seven in which amputation was done five have been free from recurrence for from five to nineteen years. There were also one case of primary sarcoma of the tibia and one of the fibula, the former was considered inoperable because of glandular metastases, and in the latter Gritti's amputation was followed by fatal metastases. The author states that radical amputation or exarticulation, at all events in primary sarcoma of the femur, saves life in a number of cases while the results of resection are rarely good. Patients preferred resection to amputation or exarticulation, but the greater risk of resection must be more clearly stressed. The material encourages active treatment of bone sarcoma at the earliest possible stage of the disease. There were five cases of metastatic bone tumors, in such cases operative treatment may occasionally be palliative.

Spontaneous Pneumothorax in Apparently Well Persons—Of Larsen's seven patients, three recovered in a short time the fourth in six months and the fifth after more than a year. In the sixth the pneumothorax persists after two years and in the seventh there is a partial pneumothorax in the apical region after one and one-fourth years. The fourth and fifth patients were brothers. In the fifth, formation of exudate occurred after a year and led to resorption of air, there was no fever and the Pirquet reaction was negative. Aspiration of air was tried in two cases, without effect.

Secondary Infection as Cause of General Infection in Acute and Chronic Gonorrhea—In Bruusgaard and Danbolt's three cases of chronic gonorrhea with prostatitis a secondary pyemic infection leading to general infection dominated the picture. In two cases, yellow hemolytic staphylococci were demonstrated by blood cultures, in the third, hemolytic streptococci. The first case was fatal after a week from almost fulminating pneumonia, in the second, amputation of the femur was indicated because of alarming arterial hemorrhages, the third patient recovered after a subfebrile period of several months. The cases are seen to illustrate the gravity of gonorrhea not only because of the grave complications due to the gonorrhea but because of the secondary infections and mixed infections which accompany it or for which it paves the way.

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THE SURGICAL TREATMENT OF INTRACTABLE PAIN

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The suffering associated with syphilitic visceral crises, inoperable carcinomas with metastases, angina pectoris, and trigeminal neuralgia needs only to be mentioned to emphasize that there are many unsolved problems associated with the physiology of pain and the surgical procedures employed for its relief. Certain clinical and experimental observations are of interest in an attempt to learn more of the pathways for the conduction of painful impulses and the methods employed for their surgical relief. In many instances, surgical empiricism has preceded known anatomic and physiologic facts in attempts to relieve the pain of some of these diseases.

Some years ago, Ranson and his associates¹ found in the cat that, as the posterior spinal roots enter the spinal cord, there is a sharp separation of the larger myelinated from the finest myelinated and unmyelinated fibers. The latter fibers, which constitute the lateral division of the root, are so placed that they may be divided easily by making a small incision along the posterior lateral sulcus of the spinal cord. They found that, immediately before such a lesion was made stimulation of the posterior root caused struggling, a rise in blood pressure and rapid respirations. After section of this lateral division, without injuring the large medial division of the root, none of these responses existed. On the contrary, section of the large medial division of myelinated fibers produced no effect on these evidences of pain. Likewise, it was found that section of the lateral columns of the white matter of the cord prevented these somatic painful reflexes.

It became of interest to know whether or not painful impulses from the viscera traveled over the same pathways within the spinal cord. Consequently visomotor, respiratory and other evidences of pain in an animal were produced by faradic stimulation of the thoracic-sympathetic trunk.² Varying rates of stimulation of the distal end of the splanchnic nerves invariably produced painful responses in normal animals. Subsequently, various horizontal lesions were produced in the spinal cord in an effort to obliterate these responses.

Sections of the posterior, anterior and lateral columns and lateral and posterior hemisections were produced without effect. It was found that a complete transverse section of the cord was the only experimental lesion that was followed by a cessation of these painful responses to stimulation. It was concluded that painful impulses from the viscera, transmitted by the thoracic-sympathetic trunk, are conducted upward by relays of short spinal paths with synapses in the gray matter of the spinal cord and do not pass into the lateral spinothalamic fiber tracts in the white matter, which serve to transmit somatic painful impulses.

An effort was then made to perform experiments which would more closely simulate visceral pain clinically. Dilation of the cystic and common ducts and of the ureters by balloons was undertaken. In the meantime, Schrager and Ivy,³ working on the same problem from a different angle, showed that dilation of the cystic duct in the dog is accompanied by a marked inhibition of respiration, vomiting, struggling and other evidences of pain. They showed also that these responses could be abolished completely by section of the right splanchnic nerve and that they were unaffected by division of the vagi or left splanchnic nerves. In association with Hart and Crain,⁴ these experiments were repeated, and, in addition, lesions of the spinal cord were produced in a manner similar to the earlier experiments. The results obtained were identical, that is, a complete transverse section of the spinal cord, or a lateral lesion which definitely injured the gray matter was necessary to obliterate the responses to these painful impulses. The posterior spinal roots were sectioned in a series of these animals and it was found that, if a sufficiently large number were sectioned bilaterally, painful responses so produced could be abolished. Stone has recently corroborated these experiments on dilation of the gallbladder after posterior root section. He has also conducted a series of similar experiments with dilation of the gallbladder after anterior root section. Contrary to the views expressed by Lehmann,⁵ Shrawe⁶ and others that there is an antidromic fiber in the anterior roots which serves as a conduction pathway for visceral painful impulses, Stone has been unable to obliterate the normal responses from dilation of the gallbladder by section of the anterior roots.

Thus far then it may be suggested that visceral afferent impulses from the gallbladder for example,

¹ Ranson, H. W., and his associates. *University Medical School*.

² See before the Section on Surgery, Central and Abdominal at the Eighteenth Annual Session of the American Medical Association, Milwaukee, June 16, 1931.

³ Schrager, A. L., and Ivy, A. C. *Ann. Surg.* 1932; 95: 1-10.

⁴ Davis, Loyal, Hart, J. T., and Crain, R. D. *The Pathway for Visceral Afferent Impulses Within the Spinal Cord*. Surg. Gynec. & Obst. 49: 67-70, 1929.

⁵ Lehmann, W. *Die Rolle der Anterior. Wurzeln in Visceral. Schmerzleitung*. W. B. Saunders, Philadelphia, 1923.

⁶ Shrawe, J. C. *The Cause and Treatment of the Painful and Their Surgical Treatment*. J. T. Surg. 9: 20-21 (July) 1922.

pass upward through the right splanchnic nerve, the thoracic sympathetic trunk, by way of the white rami to the spinal nerves, and then by way of the posterior roots into the cord. Within the cord these impulses pass upward by relays of short spinal paths with synapses in the gray matter.

These experimental facts have a definite and direct application in clinical surgery. For many years, surgeons have attempted to relieve the pain of the visceral crises in *tabes dorsalis* by posterior root sections or by

spread along the ulnar sides of both arms, but more particularly into the left, in which the pain was felt in his ring and fifth fingers. A laminectomy was performed, and the posterior roots of the first six thoracic segments were sectioned bilaterally. His relief from pain has been complete for one year following the operation without the slightest impairment of function in his upper extremities (fig 2).

As far as I am aware, this is the first recorded instance of the relief of angina pectoris by posterior root section. Such a surgical procedure for the relief of angina pectoris is based on a knowledge of the pathway of the visceral afferent impulses into the spinal cord. It should be recognized also that the cardiac accelerator mechanism is not disturbed by such an operation.

This leads to the mechanism of the reference and recognition of pain from visceral disease in the periphery. A number of theories exist for the explanation of the sensation evoked by visceral stimulation. Lennander's¹⁰ idea that all visceral pain was mediated through the parietal peritoneum was disproved by Neumann.¹¹ Ross¹² has stated that either true visceral pain may be present alone or it may occur in association with pain in the skin, muscles and connective tissue innervated by the same spinal segments. Lange¹³ thought all pain in visceral disease was purely reflex in origin. He traced the impulses through the afferent fibers of the vegetative nervous system to the spinal

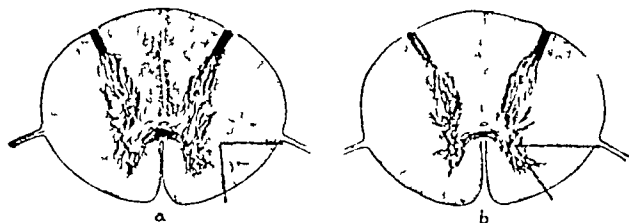


Fig 1—Thoracic segment of the spinal cord. a direction of the incision anterior to the dentate ligament to include the anterolateral column for the relief of somatic pain; this incision must be carried medially (b) to include part of the gray matter in order to obtain relief from visceral pain.

anterolateral sections of the spinal cord, in operation which was first suggested by Spiller and carried out by Martin.⁸ The results of chordotomy operations performed for the relief of such visceral pains uniformly have been unsuccessful if the sections have been made to affect only the spinothalamic tracts. Whereas such a procedure invariably relieves pain of somatic origin, visceral pain has been unrelieved. However, it has been noted that when such lesions have been carried deeply, so that a portion of the gray matter has been included, relief from tabetic visceral crises has been obtained (fig 1). Recently Foerster,⁹ in an autopsy specimen, demonstrated the level of a chordotomy that had been performed with success for the relief of gastric crises. His sections showed unmistakably the extent of the lesion in the gray matter of the cord. This is exactly what one would expect from the experimental facts.

The results of posterior root sections for the relief of visceral crises have not been uniformly successful. Probably the error has been in the failure to section a sufficient number of posterior roots bilaterally. A clinical experience with such a case is to the point.

The posterior roots from the fourth dorsal to the twelfth dorsal segment inclusive were sectioned bilaterally in a patient with severe visceral crises. This procedure was carried out in two operations and inadvertently the eighth pair of spinal roots were left intact. Although the area of superficial cutaneous sensibility represented by this root was extremely small, the patient continued to have pain until this root was sectioned. It would appear that only a very small pathway into the spinal cord was sufficient to carry the painful visceral impulses in this patient.

In support of the effect of adequate posterior root sections on the relief of pain of visceral origin, another clinical experience is in point.

A man had been suffering from angina pectoris for the past four years, during which time he had been wholly unable to work. He had been under observation in the cardiac clinic and was taking large doses of glyceryl trinitrate daily for the relief of his pain, which occurred while at rest and on the slightest exertion. His pain began over the sternum and

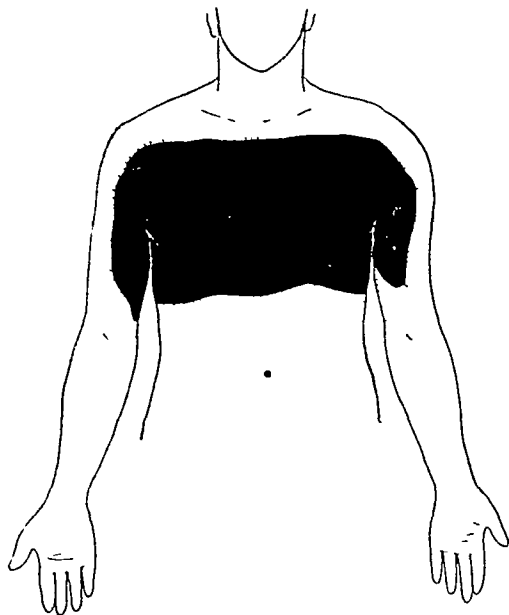


Fig 2—Sensory loss after bilateral section of the posterior roots of the first six thoracic segments for the relief of angina pectoris.

cord, where he believed that radiation occurred along the sensory tracts to the abdominal wall. Spiegel¹⁴ states that the impulses pass to the posterior horns of the spinal cord and are there diffused to the roots of the corresponding somatic nerves. Mackenzie,¹⁵ Ross¹

8 Spiller W G and Martin Edward. The Treatment of Persistent Pain of Organic Origin in the Lower Part of the Body by Division of the Anterolateral Column of the Spinal Cord. *J. A. M. A.* 58: 1489 (May 18) 1912.
9 Foerster O. Lecture read before the Chicago Institute of Medicine

10 Lennander K G. Ueber die Sensibilität der Bauchhöhle und über lokale und allgemeine Anaesthetie bei Bruch und Bauchoperationen. *Centralbl. f. Chir.* 28: 209 1901.
11 Neumann A. Zur Frage der Sensibilität der innern Organe. *Centralbl. f. Physiol.* 24: 1213 1910 1911.
12 Ross J. On the Segmental Distribution of Sensory Disorders. *Brain* 10: 333 1888.
13 Lange C. Nogle bemærkninger om Neuralgier af deres behandlung. *Hospitaltid.* 2: 641 1875.
14 Spiegel E. Ueber das Wesen des Bauchschmerzes und seiner Begleiterscheinungen. *Wien med. Wchnschr.* 77: 379 1927.
15 Mackenzie James. Symptoms and Their Interpretation. London Shaw & Sons 1920.

and Head¹⁶ all believe that in visceral disease a form of irritation is produced in the spinal cord and that sensory impulses from other parts passing into this segment are so exaggerated as to be painful.

In corroboration of the work of Weiss and Davis¹⁷ and of Lemaire,¹⁸ we have been able to relieve the pain of gallbladder colic, angina pectoris and other intra-abdominal lesions by the subcutaneous infiltration of procaine hydrochloride solution in the peripheral area to which the pain is referred. In experimental support of these clinical observations, we¹⁹ have shown that the evidences of pain produced in an animal by dilation of the cystic duct are definitely altered by section of the intercostal nerves. The relief of the pain of angina pectoris by paravertebral injections of alcohol is corroborative of these facts. I suggest, however, that this relief is obtained by the effect of the alcohol on the intercostal peripheral nerves and not solely on the injection of the sympathetic rami communicantes. The anatomic relations of these structures make isolated injections of the rami communicantes almost impossible, and the presence of peripheral cutaneous sensory changes make this supposition highly probable. It is possible that visceral painful impulses produce efferent cutaneous reflex effects, which in turn liberate a metabolite in the skin which is painful. These somatic painful impulses are in turn carried into the cord and to consciousness over the well known somatic afferent pathways. This conception of the mechanism of referred pain from the viscera was set forth by Pollock and me²⁰ as the result of a series of experiments on stimulation of the cervical sympathetic chain before we were aware of Lemaire's work and his similar theory.

Recently, the role of the sympathetic nervous system in the production of pain has been under investigation. The results of some of these experiments have led some authors to doubt the validity of the Bell-Magendie law, which attributed motor functions alone to the anterior spinal roots. Special emphasis on the importance of this aspect of the sympathetic system has been made by the reports of the relief of other types of pain such as angina pectoris, causalgia and abdominal pains by various surgical operations on the sympathetic nervous system. Jonnesco²¹ has relieved the pain of angina pectoris by the removal of the middle, inferior cervical and first thoracic ganglions of the left sympathetic chain. Successful results have been reported from essentially similar operations by Bruning²² and others. Coffey and Brown²³ have obtained somewhat similar results by sectioning the sympathetic trunk and the superior cardiac nerve below the superior cervical ganglion or by excising this ganglion. Foerster, Alten-

burger and Kroll²⁴ reported some observations on man in which pain was produced by suitable stimuli in areas in which the somatic afferent supply had been severed. They believed that the only possible intact afferent pathway consisted of periarterial plexuses of nerve fibers which ended in the sympathetic ganglionic chain. From these observations, they concluded that sensory impulses may travel along periarterial plexuses to the sympathetic ganglionic chain and from there enter the spinal cord. On the basis of the work of Mündl²⁵ on paravertebral injections, attempts have been made to block the rami communicantes by such a method.²⁶ Abdominal pains have likewise been relieved by von Gasa,²⁷ Scrimger²⁸ and Archibald²⁹ by section of the abdominal sympathetic nerves, and the sacral portion of the sympathetic trunk has been resected for the relief of pain in inoperable carcinoma of the uterus.

Although pain may be produced by stimulation of parts of the sympathetic nervous system or relieved by severance of suitable parts of the sympathetic nervous system, there is no agreement as to the physiologic mechanism involved. Painful impulses may be conducted along the sympathetic nerve fibers, or the visceromotor or other reflex activities may produce conditions which in turn are responsible for conscious pain. On the other hand, both mechanisms may be present.

Pain has been produced by faradic stimulation of the superior cervical sympathetic ganglion in man by Frazier,³⁰ Peet³¹ and Foerster.³² The head is a particularly suitable part of the body for the investigation of the role of the sympathetic nervous system in the production of pain, because it is possible to cut all the posterior roots connected with the cervical sympathetic chain without producing an analgesia of the skin overlying the parts from which painful sensation may occur. Since it is conceivable that the superior cervical ganglion and its immediate environs are supplied with sensation by nervi nervorum, it is necessary to clear this area of afferent nerves when one wishes to study the results of faradic stimulation of the ganglion.

Langley³³ presented evidence to show that there are no afferent fibers in the cervical sympathetic trunk; this has been strengthened by the work of Ranson and Billingsley.³⁴ On an anatomic basis the sympathetic supply to the structures of the head and face must be considered as consisting purely of efferent fibers.

In a series of experiments to determine the role of the sympathetic fibers in the production of pain in

16. Head, Henry. On Disturbances of Sensation with Especial Reference to the Pain of Visceral Disease. *Brain* 10: 1893 17: 339 1894 10: 183 1896.

17. Weiss, Soma and Davis, David. The Significance of Afferent Impulses from the Skin in the Mechanism of Visceral Pain. *Am J M Sc* 1: 61 (Oct) 1928.

18. Lemaire, A. La perception des douleurs viscérales. *Rev med de Louvain* 6: 61 1926. *Recherches cliniques sur le rôle de perception de douleurs viscérales*. Bull Acad. Roy de med de Belgique series 5 No 1 1927 p 156.

19. Davis, Leal, Pollock, L. J. and Stone, T. T. Visceral Pain. *Surg Gynec & Obst* 418 (Oct) 1922.

20. Davis, Leal and Pollock, L. J. The Role of the Sympathetic Nervous System in the Production of Pain in the Head. *Arch Neurol & Psychiat* 2: 1 (Oct) 1932.

21. Jonnesco, T. Traitement chirurgical de l'angine de poitrine par la résection du sympathique cervical. *Bull Acad. Roy de med de Belgique* 29: 193 (Mars) 1904.

22. Bruning, J. Die operative Behandlung der Angina Pectoris durch Exstirpation des Hals- und Brustsympathicus. *Arch Neurol & Psychiat* 2: 1 (Oct) 1932.

23. Coffey, W. B. and Brown, P. A. The Surgical Treatment of Angina Pectoris. *Am J M Sc* 31: 1 (Feb) 1911.

24. Foerster, O., Altenburger, H. and Kroll, F. W. Ueber die Beziehungen des vegetativen Nervensystems zur Sensibilität. *Ztschr f d ges Neurol u Psychiat* 121: 140 1929.

25. Mündl, F. Die Wirkung der paravertebralen Injektion bei Angina pectoris. *Arch f klin Chir* 136: 495 1925.

26. Swallow, C. I. Paravertebral Block in Cardiac Pain. *Am Heart J* 1: 393 (April) 1926. White, J. C. and White, P. D. Angina Pectoris. Treatment with Paravertebral Alcohol Injections. *J A M A* 90: 1099 (April 7) 1928.

27. von Gasa, W. Ueber Paravertebrale Neurektomie am Grenzstrange und paravertebrale Injektionstherapie. ein Beitrag zur Behandlung neurotischer funktioneller Krankheitszustände bauchinnerer Organe. *Klin Wchnschr* 2: 525 (March 25) 1924.

28. Scrimger, T. A. C. On the Possibility of Relieving Abdominal Pain by Section of Sympathetic Rami Communicantes. *Canad M A J* 21: 184 (Aug) 1929.

29. Archibald, F. W. Effect of Sympathectomy on the Pain of Organic Disease of Arteries of the Lower Limbs and for Obsolete Abdominal Pain. *Ann Surg* 88: 499 (Sept) 1928.

30. Frazier, C. H. Atypical Neuralgia. In successful Attempts to Relieve Pain by Operations on the Cervical Sympathetic System. *Arch Neurol & Psychiat* 11: 557 (May) 1924.

31. Peet, M. M. Is Herpetic Trigeminal Neuralgia a Result of Pain After Section of the Sensory Root of the Gasserian Ganglion? *J A M A* 92: 1891 (May 4) 1929.

32. Foerster, O. Die Leistungsfähigkeit des Schmerzgefühls und die chirurgische Behandlung der Schmerzkrankheiten. *Berlin Urban & Schwarzenberg* 1927.

33. Langley, J. N. Observations on the Medullated Fibers of the Cervical Sympathetic and their Role in the Causation of Pain. *J Physiol* 20: 55 1927.

34. Ranson, S. W. and Billingsley, J. R. Branches of the Ganglionic Cervical Sympathetic. *J Comp Neurol* 29: 67 1919.

the face, Pollock and I²⁰ found that (1) stimulation of the cervical sympathetic trunk does not produce pain, and (2) that stimulation of the superior cervical sympathetic ganglion produces pain. The latter fact holds true after section of a large number of anterior and posterior spinal roots, beginning with the first cervical segment. It is also true after section of the anterior spinal roots and section of the sensory root of the trigeminal nerve. Pain could not be produced, however, by stimulation of the isolated ganglion after section of the posterior spinal roots and the sensory root of the trigeminal nerve. It is probable, therefore, that stimulation of the superior cervical sympathetic ganglion produces an effect which is carried by way of post-ganglionic efferent fibers to the structures innervated by the sympathetic fibers. These efferent impulses produce an effect on the skin and other structures the exact nature of which is as yet unknown. It is quite possible that this effect is linked with the sympathetic innervation of the blood vessels and that a metabolite is liber-

observations (1) that all sensation did not disappear from an expected area following section of the posterior roots, (2) that pain was not relieved or returned after section of the posterior roots, and (3) that pain did disappear permanently after section of the anterior and posterior roots.

A clinical experience may be cited in which there was a complete loss of all sensibility after section of all the posterior roots to an upper extremity in a man.

A young man suffering from the sequelae of epidemic encephalitis in the form of a parkinsonian state applied for help. The rigidity was so great as to make life unbearable. Despite the administration of large and sustained doses of scopolamine, he was often unable to assist himself in the simplest wants. It was thought justifiable to section the posterior roots which supplied the right upper extremity, which was the more rigid in the hope that, if the rigidity disappeared subsequent muscle reeducation would make the limb serviceable.

Dec. 14, 1928, under local anesthesia, a laminectomy was performed, on the third, fourth, fifth and sixth cervical vertebrae. The fourth, fifth, six, seventh and eighth cervical posterior roots on the right side were ligated and sectioned. The sensory loss occupied chiefly the areas ordinarily attributed to the fifth, sixth and part of the seventh cervical segments (fig. 3). Therefore, Jan. 9, 1929, again under local anesthesia, a laminectomy was performed on the seventh cervical and on the first, second and third dorsal vertebrae. The first, second, third and fourth right dorsal posterior roots were sectioned. Sensory examination at this time showed complete loss of pain, touch and temperature sense over the entire right upper extremity and the upper part of the thoracic wall extending downward to the nipple line. The area of loss of touch slightly exceeded this border, and the loss of cold was slightly more extensive than the loss of touch. Passive movement of the segments about the joints of the fingers, wrist and elbow were not recognized. Vibration sense was absent over the elbow, wrist, fingers and thumb, and he was unable to describe the position passively imposed on the extremity. Deep pin prick and piercing the skin were not felt on the forearm, lower part of the arm, wrist or fingers. Pinching with artery forceps did not produce pain, and piercing the median basilic vein, scratching its intima and lacerating it produced no pain. No sensation was experienced on the prolonged application of the distended cuff of a sphygmomanometer, and its release was not accompanied by any sensation. Compressing a segment of a vein and distending it with physiologic solution of sodium chloride produced no pain. Piercing the radial artery, distending a segment of it with saline solution and lacerating it produced no sensation. The upper border of the loss of deep sensation and pressure pain was not outlined at this time.

April 7, 1930, the patient was reexamined. The upper level of pressure sensation was bounded by a line 1½ inches below the area of loss of touch. The loss of deep pressure pain sense, with a 6 Kg. stimulus, was bounded by a line about 2 inches below the area of loss of touch. It is of interest that deep pressure pain could not be elicited over the upper part of the chest because the supply to the pectoral, serratus magnus and latissimus dorsi muscles had been interrupted. The most severe twisting and pinching of the skin was not felt and transfixing the skin with a hypodermic needle did not evoke any sensation. About 1 cc. of a solution of neoarsphenamine was injected about the median cephalic vein and, although inflammatory changes were produced, no sensation was felt. The radial artery was transfixed by a needle electrode, and no sensation was felt on stimulation by a strong faradic current.

These observations have been corroborated by experimental investigations of the reflexes on animals before and after decerebration. The insensitive extremity participated in the rigidity assumed by the other legs. It reacted normally to tonic neck and labyrinthine reflexes.

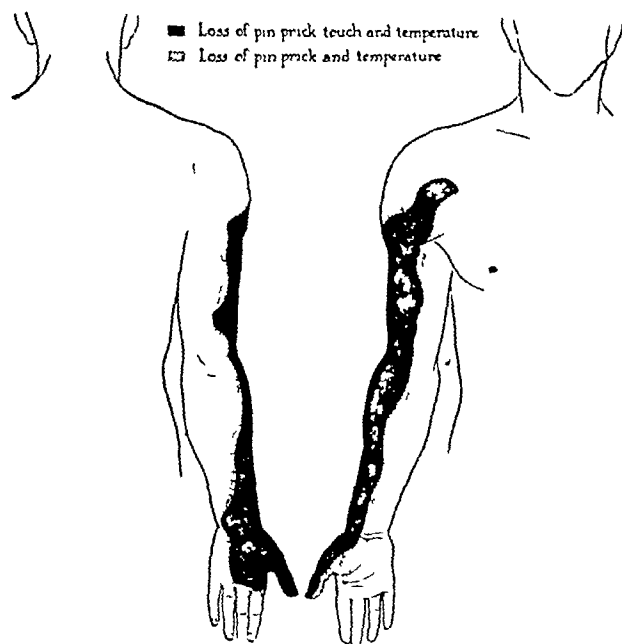


FIG. 3.—Sensory loss after section of the fourth, fifth, sixth, seventh and eighth cervical posterior roots.

ated which in turn stimulates the ordinary sensory nerve endings of the fifth nerve. This impulse is then transmitted centrally and is recognized as pain. The relief of pain of visceral disease by blocking or severing the intercostal and abdominal nerves, which has been previously mentioned, is in direct relation to these observations.

Finally, the peripheral pathway for painful sensations must be considered. In other words, may pain be conducted antidromically over the anterior spinal roots into the spinal cord? This theory, in contradiction of the Bell-Magendie law, has been invoked to explain the failure of posterior root sections to relieve somatic pain.²¹ Such a conception, if correct, would have considerable bearing on the surgical relief of pain. Without reciting the details of the clinical cases reported in the literature, the assumption of the existence of antidromic sensory fibers in the anterior roots was based on the

35 Kidd, Leonard. Afferent Sensory Fibers in the Spinal Ventral Roots. *Brit. M. J.* 2: 359, 1911. Lehmann, Shawe. Wartenberg. R. Klinischen Studien zur Frage der Geltung des Bell-Magendieschen Gesetzes. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 113: 518, 1928.

36 Davis, Foyal and Pollock, L. J. The Peripheral Pathway for Painful Sensations. *Arch. Neurol. & Psychiat.* 24: 883 (Nov.) 1930.

Crossed extension was produced in it by flexor responses to painful stimuli applied to the opposite upper extremity. Not a single reflex movement on the same or opposite side could be elicited by any form of stimulation of the affected extremity. Pricking the skin, pushing against the foot pad, incising the skin or aponeurosis, fascia, muscle or nerves, stimulating the vessels and nerves with a faradic current, scraping the periosteum and crushing the bones all failed to produce the slightest motor response. I believe it is justifiable to assume that, if all of the posterior roots to an extremity are sectioned, all sensation, cutaneous and deep, will be lost.

SUMMARY

1 Visceral afferent painful impulses travel by way of the splanchnic nerves to the spinal cord and thence upward by relays of short neurones in the gray matter.

2 Chordotomy, unless the lesion is deep and injures the gray matter, will not relieve visceral pain, although it will abolish intractable somatic pain.

3 Posterior root section operations, in which a sufficiently large number of roots are severed, will abolish visceral pain.

4 The pain of angina pectoris has been abolished by posterior root section. Such an operation definitely attacks the afferent pathway for the painful impulses and does not interfere with the cardiac accelerator mechanism.

5 The stimulation of efferent sympathetic fibers produces changes in the periphery, which in turn stimulate the ordinary somatic afferent fibers that transmit pain. The relief of pain by section of sympathetic fibers is, therefore, based on the interruption of efferent pathways.

6 Section of all the posterior roots that supply the upper extremity in man and in animals interrupts all form of superficial or deep sensation.

7 There is no evidence of a sensory pathway through the anterior spinal roots.

54 East Erie Street

ABSTRACT OF DISCUSSION

DR. MAX M. PEET, Ann Arbor, Mich. A good deal of confusion has arisen as to what is meant by sympathetic fibers and as to whether they carry pain or are purely efferent or afferent. The anatomists Ransom and Hubert probably take the best view. They state that surgeons are confusing the matter when they speak of surgery of the sympathetic system instead of surgery of the autonomic system. According to them the sympathetic system is a gross anatomic term connoting a gross group of nerves and ganglions which are of mixed nature, they contain efferent autonomic fibers and posterior root sensory fibers. When as surgeons we speak of stopping pain by a sympathectomy do we mean that we are cutting posterior root fibers or that we are interrupting efferent fibers carrying impulses out from the cord? Are we stopping pain because we are stopping it or are we stopping its recognition? I have felt that the autonomic system may cause pain by causing peripheral contracture of the blood vessels or by some other unknown mechanism and that when we cut the gross anatomic structure spoken of as a sympathetic chain we may be doing one of two things either cutting autonomic fibers that are carrying out impulses or cutting sensory fibers returning that sensation in which case we are interrupting the recognition of the original stimulus. The question has been raised by Davis and others. Do the anterior roots carry pain sensation or anything that may cause pain sensation? I have had only one indication that a sensory fiber may be carried in the anterior root. This was in an elderly woman who had a special intercostal neuralgia every way resembling that of intercostal neuralgia

except in its anatomic distribution. It is the only case that I have seen that I would want to call intercostal neuralgia. She had every manifestation of a tic douloureux except it was in her back. The pain was completely eliminated and no longer would any stimulus bring on pain, but at times she had pain develop without outside stimuli. Some time later I exposed the spinal cord again, and when I touched one of the anterior roots she had excruciating pain which she described as identical with the pain she had been having, and when I cut them she was free. I am convinced from a series of a little over eighty chordotomies that chordotomy performed at a deep enough level and sufficiently high in the spinal cord will relieve both somatic and visceral pain. I feel that the visceral pain enters at many levels, that it is carried up along that gross sympathetic tract and that one must go very deep into the gray matter, as Davis has shown, in order to stop the pain of visceral origin.

DR. JOHN L. GARVEY, Milwaukee. Dr. Davis has presented some very conclusive clinical experiments. It is very difficult to go into the subject of the sensation of pain in animal experimentation. I think it has been carried through in a clinical way by the neurosurgeons in a fine manner and that they have added a great deal to the knowledge of neural physiology.

THE POSTPARTUM KIDNEY

HENRY W. E. WALTHER, M.D.

AND

ROBERT M. WILLOUGHBY, M.D.

NEW ORLEANS

Renal infections complicating pregnancy are receiving an ever increasing degree of attention from both obstetricians and urologists. This unquestionably bespeaks a further reduction in the untoward situations arising out of the parturient state. Until recently, the major portion of care was devoted to the antepartum period, to the neglect of many postpartum sequelae. It can no longer be taken for granted that, following delivery, vigilance can be relaxed. Hospital records attest the fact that postpartum complications still occur and, in fair measure, the urinary tract shares in these unfortunate end results.

Because such cases have come under our observation, in private practice, it was considered that a report might be of interest. We include cases that were unrecognized prior to delivery, cases recognized before delivery but remaining untreated until after parturition, and cases recognized but presenting no complications until after childbirth.

The delay in detecting many of these conditions we believe due to the patient's feeling that such symptoms are a part of the discomfort pregnant women must endure, while others purposely conceal their distress in fear that complaint will render them subject to additional suffering by having to undergo instrumental investigation. It would appear, therefore, that the physician must encourage more assiduous urine studies and offer assurance that today cystoscopy can be performed painlessly.

Before entering into a discussion of the group of cases to be considered, it might be well to review briefly the theories that have been advanced regarding renal infection during pregnancy. Owing to the fact that about 80 per cent of all pregnant women have stasis of the upper urinary tract no matter how normal their course it is not easy to explain why some 90 per cent of them terminate labor without renal complications.

Since Folsom¹ presented his work on the compound racemose glands of the female urethra, there has been a clearer understanding of many postpartum infections traumatized. A resulting lymphangitis, in the presence of pelvic stasis, could readily serve as a nidus for bacterial growth. *Escherichia coli* is the micro organism

Cases of Postpartum Renal Infection

Case	Urine Sediment		Renal Pelvis Stasis				Temperature Before Treatment	Renal Lavage	Indwelling Catheter	Number of Lavage Required	Time Required to Bring Temperature to Normal
	Before Treatment	After Treatment	Before Treatment		After Treatment						
			Right	Left	Right	Left					
1	Pus 4 Coll 4	Pus 1 Coll 1	15 cc	None	None	None	104.2	Yes	None	1	12 hours
2	Pus 4 Coll 4	Pus 4 Coll 4	20 cc	10 cc	20 cc	10 cc	103.5	None	2 day intervals 3 sittings	"	Temperature dropped recurrent rise died of sepsis
3	Pus 4 Coll 4	No follow up	None	None	None	None	104.0	Yes	None	1	1 day
4	Pus 1 Staph 1	Pus 1 Staph 1	None	None	None	None	103.8	Yes	None	1	1 day
5	Pus 4 Coll 4	Pus 3 Coll 2	12 cc	None	5 cc	None	104.0	Yes	24 hrs	2	3 days
6	Pus 4 Coll 4	Normal	None	None	None	None	104.2	Yes	None	1	1 day
7	Pus 2 Coll 2	Pus few cells Coll 2	None	None	None	None	104.0	Yes	None	1	2 days
8	Pus 4 Coll 4	Normal	20 cc	15 cc	None	None	103.0	Yes	18 hrs	3	3 days
9	Pus 4 Coll 4	No pus Coll 2	None	None	None	None	103.3	Yes	None	3	10 days
10	Pus 1 Coll 1	Normal	None	15 cc	None	None	103.5	Yes	None	2	2 days
11	Pus 4 Coll 4	Normal	None	None	None	None		Yes	None	"	10 days
12	Albumin 4	Albumin 1	40 cc	20 cc	None	None	102.0	Yes	None	2	3 days
13	Pus 4 Coll 4	Normal	None	None	None	None	104.0	Yes	None	5	18 days
14	Pus 4 Coll 4	Normal	10 cc	None	None	None	104.0	Yes	R side 24 hrs	3	11 days
15	Pus 4 Coll 4	Normal	12 cc	10 cc	None	None	104.0	Yes	R and I 12 hrs	2	3 days
16	Pus 4	Normal	20 cc	None	None	None	106.0	Yes	R and I 24 hrs	4	10 days
17	Pus 1 Coll 4	Normal	None	None	None	None	104.0	Yes	None	4	17 days
18	Pus 2 Coll 2	Pus 1 Coll 1	10 cc	12 cc	None	None	104.6	Yes	R and I 2 days	3	8 days
19	Pus 4 Coll 4	Pus 1 Coll 1	None	None	None	None	104.2	Yes	None	2	5 days
20	Pus 4	Pus 1	20 cc	None	5 cc	None	104.0	Yes	R 24 hrs	2	3 days
21	Pus 4 Coll 4	None	80 cc	10 cc	None	None	102.0	None	R and I 24 hrs	3	Died of sepsis
22	Pus 3 Coll 3	Normal	None	18 cc	None	None	104.0	Yes	None	2	3 days
23	Pus 2 Coll 2	Pus 1 None	None	None	None	None	103.0	Yes	None	1	2 days
24	Pus 4 Coll 4	Pus 1 Coll 1	None	None	None	None	104.2	Yes	None	2	6 days
25	Pus 2 Coll 2	None	15 cc	None	None	None	104.0	Yes	None	2	1 day
26	Pus 4 Coll 4	Pus 1 Coll 1	10 cc	10 cc	5 cc	None	104.0	Yes	R and I 24 hrs	2	7 days
27	Pus 4 Coll 4	Pus 1 Coll 1	None	8 cc	None	10 cc	100.0	Yes	I side 24 hrs	3	1 day
28	Pus 4 Staph 4	Pus 1 Staph 1	10 cc	None	None	None	100.8	Yes	None	2	2 days
29	Pus 2 Coll 4	Normal	None	10 cc	None	None	106.0	Yes	None	"	8 days
30	Pus 4 Staph 4	Pus 1 Staph 1	60 cc	60 cc	10 cc	5 cc	101.0	Yes	R and I 24 hrs	4	2 days
31	Pus 2 Coll 2	Pus cells few Coll few	20 cc	None	None	None	103.0	Yes	None	2	1 day
32	Pus 4 Coll 4	Pus 4 Coll 4	—No cystoscopy permitted—				104.0	None	None		18 days
33	Pus 1	Normal	10 cc	None	None	None	104.0	Yes	None	2	1 day
34	Pus 4 Coll 4	Normal	20 cc	None	5 cc	None	104.0	None	Dilated right ureter and drained right kidney 12 hrs	2	1 day
35	Pus 4 Coll 4	Normal	None	10 cc	None	None	104.2	Yes	L side 24 hrs	2	3 days
36	Pus 4 Coll 4	Normal	45 cc	None	10 cc	None	103.6	Yes	R side 24 hrs	3	2 days

His studies point to a possible lymphatic extension from the deep urethra in women to the kidney pelvis. During delivery, infected urethral glands are frequently

most commonly observed in these patients and the staphylococcus group comes next in frequency. Many ascending infections from the bladder, according to Hofbauer,² originate from urinary retention in

¹ Folsom, A. I. The Female Urethra. J. A. M. A. 97: 1345-1350 (Nov. 7) 1931.

² Hofbauer, J. I. Personal communication to the authors.

atomic bladders due to traumatism that viscus sustains during labor. Prather³ observed vesical residual urine in 11 per cent of pregnant cases. He feels that trauma, bladder complications and a flare up of previous infections of the urinary tract mainly explain such complications. Of the postpartum urinary disturbances studied by him, 87.6 per cent occurred in primiparas. This coincides with the figures in our series.

In our opinion, extension from the cervix, as an aftermath of the trauma to which this structure is subjected at delivery, has not been accorded sufficient attention. Aversion on the part of obstetricians to study, microscopically, stained smears of secretion obtained from cervixes immediately after delivery (an attitude eminently sound) makes it most difficult to state with exactness the proportion of cases falling in this category. However, when it is realized that fully 75 per cent of parturient women have endocervicitis, in varying degree, and when studies of Benedict, Von Lackum and Nickel⁴ are recalled, which stress the interrelation between inflammatory diseases of the eye and foci in pelvic organs, it is rational to suppose that the cervix plays a part in the creation of the postpartum kidney.

Hunner⁵ directed attention to the possibility of ureteral stricture as a causative factor in the production of renal infection. We would have been unsuccessful in clearing up at least one of our cases had we ignored his teachings.

Whether the extension is lymphogenous more often than hematogenous is beside the question. Blood stream infections are observed by all urologists, and beyond any doubt some postpartum kidney lesions are to be attributed to this factor. It has become an axiom among cystoscopists that pyelonephritis following delivery and puerperal fever are not infrequently synonymous.

Crabtree and Prather⁶ stress the importance of hospitalization of these cases and prove, by their results, the value of a urologic consultant on the staff of every institution having a lying-in department. They emphasize conservative treatment in kidney ailments during pregnancy, such as forced fluids, rest in bed, urinary antiseptics and sedatives as needed. This plan is to be strongly recommended. When, after a fair trial, it fails to relieve, more energetic means must be employed. The series of cases here reported fall into the latter group.

We reiterate our position relative to internal urinary antiseptics. For the past seven years we have devoted a great deal of attention to this fascinating and controversial problem. Our work has been divided equally between studies in the urologic wards and experimental investigations in the pharmacologic laboratory. All the drugs presently recommended for use in urinary infections have been submitted to extensive and impartial trial. Our conclusions remain in accord with the observations⁷ that of all urinary antiseptics now in use pyridium in doses of from 0.1 to 0.2 Gm., administered orally three times a day, is superior to other drugs. These conclusions are based on having administered the dye in some 3,000 cases over a period of time suffi-

ciently adequate to judge of its merit. Not alone does pyridium retard bacterial growth in the majority of cases but it invariably has a soothing effect on the bladder mucosa not experienced in other drugs.

In the past seven years, 610 cases of pyelonephritis have been treated at the Southern Baptist Hospital, this, from a total of 42,000 admissions, gives an incidence of 1.4 per cent. Of this number of kidney infections, fifty-eight, or 2.4 per cent, occurred among the 2,400 women admitted for delivery. Postpartum kidney infection was observed in thirty-six, or 1.5 per cent. It is with the latter group that we are concerned. It should be remembered that in this postpartum series we were called in consultation because most of the patients were quite ill. Conservative measures had been tried by the attending obstetricians, in nearly every instance without relief of symptoms. Of the thirty-six cases of postpartum renal infection tabulated, twenty-one patients, or 58.3 per cent, had temperatures of 104 or above when first seen. Twenty-four patients, or 66.7 per cent, had pelvic stasis, eleven, or 30.5 per cent, in the right side, five, or 13.8 per cent, in the left, and eight, or 22.2 per cent, in both sides. This stasis varied from 10 to 85 cc. Seven, or 19.4 per cent, left the hospital with from 5 to 20 cc of stasis, twenty-seven, or 75 per cent, were dismissed with no stasis. All but three cases showed marked pyuria and bacteriuria or both. Twenty-eight, or 77.7 per cent, showed *Escherichia coli*, while only three, or 8.3 per cent, showed staphylococci. Seventeen patients, or 47.1 per cent, left the hospital with some evidences of infection still present, these were out-of-town patients and could not be followed to the point of renal sterilization. Seventeen patients, or 47.1 per cent, were discharged with normal urines. One case disappeared early from observation, and in the other cystoscopy was refused.

All these patients were confined to bed in the hospital, as the symptoms were recognized within a few days following delivery. Attempting to keep the lower colon empty with high flushes is routine with us in dealing with infected kidney cases. Seven days on restricted fluids plus pyridium by mouth is alternated with three days of forced fluids plus alkalis. When difficulty is experienced in getting the patient to swallow sufficient water (from six to ten glasses daily), fluids are administered by means of the duodenal tube, by proctoclysis, by hypodermoclysis or by the intravenous Matas drip (physiologic solution of sodium chloride or dextrose being used).

Two types of local treatment were employed to combat the pyrexia and lumbar pain. In thirty-two, or 88.8 per cent, lavage with 0.5 per cent silver nitrate solution through a 7 F ureteral catheter was instilled after the stagnant urine had been aspirated from the pelvis of the kidney. From one to five such treatments at intervals of four days proved most effective. Fourteen, or 41.6 per cent, of the cases were treated with indwelling catheters, usually of sizes from 7 to 9 F, the time allowed for the catheter to remain in place ranging from eighteen hours to two days, the time factor being determined by the amount of stasis and the tolerance of the individual. In thirteen patients, or 36.1 per cent, subjected to indwelling catheter drainage including some of our most refractory cases, this procedure aided materially in shortening the convalescence. By one or the other of these methods, or by combining the two the temperature was reduced to normal in from one to eighteen days. The average time required to relieve patients from fever was five

³ Prather, C. C., Postpartum Bladder Complications. *Am. J. Obst. & Gynec.* 1: 215-26 (Feb.) 1929.

⁴ Benedict, W. L., Von Lackum, W. H. and Nickel, A. A. C. The Pelvic Organs as Foci of Infection in Inflammatory Diseases of the Eye. *Arch. Ophth.* 56: 116-121 (March) 1927.

⁵ Hunner, G. L., What the Gynecologist Should Know About Uterus. *Am. J. Obst. & Gynec.* 1: 45-62 (April) 1928.

⁶ Crabtree, E. C. and Prather, C. C., Urinary Diseases in Pregnancy. *J. Urol.* 26: 459-517 (Oct.) 1931.

⁷ Walther, H. W. F., Clinical Application of Urinary Antiseptics. *Am. J. Urol.* 22: 111-117 (Feb.) 1929.

days. The patient who refused cystoscopic therapy had a continuous high fever for eighteen days, it then dropped to normal but the urine, at the time of discharge from the hospital, still showed pus 4 and *Escherichia coli* 4.

The two fatalities in the series resulted from general sepsis. Whole blood transfusions, by the method of Head, have proved most valuable to us in treating septicemia. However, both of these patients came under observation too late for this procedure to be of assistance.

An analysis of this series reaffirms our previous contention that indwelling ureteral catheters, when used judiciously, cause no ill effects and, in many instances, unquestionably shortened the period of treatment. By adopting catheters coated with gold leaf, introduced by one of us,⁸ the hazards of having urinary salts attack the gum coating on ordinary catheters is obviated thereby doing away with the possibility of traumatizing the ureteral mucosa on withdrawal.

During the past year we have been experimenting with soft rubber ureteral catheters made rigid for introduction by whalebone stylets, and favor them for indwelling purposes when it is found possible to introduce them. Certainly they cause less discomfort than the gum-silk ureteral catheters. Regarding lavage of the renal pelvis with antiseptic solutions, no argument is required to extol further its established place in the treatment of pyelonephritis.

628 Common Street

URINARY TRACT INFECTIONS ASSOCIATED WITH PREGNANCY

THEIR FATE IN SUCCEEDING PREGNANCIES

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AND

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This study is based on a group of more than 400 cases of disease of the urinary tract associated with pregnancy, which have been treated by one or both of us over a period of years, extending from 1919 to the present time. Many of these patients were seen in but a single pregnancy, others have been regular customers at our clinic, and we have been able to compile data covering the complete child-bearing period in a considerable group. Unfortunately, owing to various handicaps that existed in former years, the earlier observations are less complete than those made in later years. Careful selections have been made from these cases, and we have used only proved facts suffering the necessary shrinkage in numbers in the interest of greater accuracy.

A conception of the importance of urinary tract infection in relation to the whole child-bearing period in women is obviously of more importance than observations of one or two isolated pregnancies from the series.

From such an opportunity as had been provided for us between the years 1919 and 1933 to collect material

along these lines we now endeavor to provide answers for the following questions:

1. What types of infection (exclusive of tuberculosis) are associated with pregnancy?
2. Does preexisting infection predispose to pyelitis in pregnancy?
3. What is the probability of cure of preexisting infections during pregnancy?
4. If infections from preceding pregnancies persist uncured into pregnancy, what is the chance of cure in pregnancy?
5. If infection has cleared between pregnancies, is the cure a guaranty of immunity from infection in subsequent pregnancies?
6. What is the relation of infected pregnancies in a series of pregnancies?
7. What influence does the type of infection have on the type of recurrence in a series of pregnancies?
8. What is the relation of gross pathologic changes of the kidney to infections in pregnancy?

TYPES OF INFECTION (EXCLUSIVE OF TUBERCULOSIS)

1. The bacillary infections: pyelitic type, pyelonephritic type.
 - (a) Those cases which either after delivery or cystoscopic treatment show sudden subsidence of symptoms (pyelitic type).
 - (b) Those which under the same conditions subside slowly over a period of days (pyelonephritic type).
2. The coccal infections which behave similarly to the bacillary infections except that there have been noted a few instances of profound sepsis due to various staphylococci and streptococci.
3. Cortical infections due to staphylococci (small abscesses).
4. Carbuncle of the kidney due to staphylococci.

In relation to the stage of the pregnancy, a second classification should be made:

1. Preexisting infection (before marriage).
2. Pyelitis in pregnancy.
3. Postpartum pyelitis.
4. Postpartum cystitis (catheter and constant drainage cases).
5. Intercurrent infection.

Two of the latter classification deserve some comment because they are not usually included in recognized classifications.

The first of these is cystitis. Since the year 1927 it has been our custom to use constant drainage in many of these cases of atonic bladders that follow delivery. These cases and certain of the intermittent catheterization cases show a pure cystitis.

There have also been recorded instances of infections that have occurred between pregnancies, often remote from the preceding pregnancies (in one instance eleven years before the pregnancy with which an infection occurred), which are clearly not to be looked on as persistent infections from preceding pregnancies.

The cases so recorded are:

Intercurrent infection between the second and third pregnancies. The third pregnancy was uninfected but there was a pyelitis with the fourth.

Diagnosis of a strictured ureter with infected urine was made between pregnancies which were widely separated. The stricture was treated but the infection was not cured. Pyelitis occurred with the succeeding pregnancy.

After a normal third pregnancy with no urinary complications a pyelitis developed seven months after delivery. Pyelitis occurred with the succeeding pregnancy (fourth).

Intercurrent infection after the fourth pregnancy, no infection with fifth, sixth, seventh and eighth, but pyelitis with the ninth.

⁸ Walther, H. W. E. Gold Leaf Coated Ureteral Catheters. *J. Urol.* 23: 287-288 (Feb.) 1930.
From the Urological Clinic of the Boston Lying In Hospital.
Read before the Section on Urology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

Intercurrent infection between the sixth and seventh pregnancies which was not cured. A mild pyelitis occurred with the seventh.

These cases seem to be on a par with other preexisting infections. They tend to recur when not cured before the beginning of the next pregnancy. If cured, the succeeding pregnancy may remain free from infection.

PREEXISTING INFECTIONS

These data are limited to patients in their first pregnancy in order to eliminate the possible effects of pregnancy on the urinary tract. Thirty-three cases were found in which the patients appeared in the clinic well advanced in pregnancy, giving a history of urinary tract infection dated at any period from early childhood on to the beginning of pregnancy.

Histories of past infections are given in the order of frequency, exclusive of tuberculosis.

Pyelonephritis and cystitis, adult
Pyelitis in childhood
Postmarital cystitis, often with pyelitis
Cystitis symptoms alone
Stone associated with infection

Twenty-seven cases presenting such histories were negative throughout the pregnancy. Six patients were infected when first seen but may not have been free from infection at the beginning of pregnancy.

TABLE 1—Type of Infection

Partly	Infection	Cured in
1	Postmarital infection	3d month
2	Mild postpartum in primipara	2d month
1	Cystitis and right pyelitis of 9 years standing, thought to be cured but appeared in third month of pregnancy	4th month
1	Pyelitis of pregnancy in second month	8th month
1	Cystitis only early in pregnancy	2d month
5	Cystitis only with cystocele	9th month

In addition to the thirty-three cases, seven patients were seen who were known to have had a preexisting infection present at the beginning of the pregnancy. The type of disease was as follows: pyelonephritis (adult), four cases; postmarital infection, two cases; cystitis symptoms with pyuria, one case.

Of these seven cases one postmarital infection was cured in pregnancy. The other six patients all developed fever and had symptoms of pyelitis.

From these data it seems probable that the history of cured preexisting infection is not important in prognosis. The majority of infected patients entering on their first pregnancy will have febrile symptoms. From other data, cure in the course of pregnancy is probably not to be expected to occur as frequently as once in seven cases.

CURE IN PREGNANCY

Most observers have agreed that, when infection is present in the urinary tract at the beginning of pregnancy, cure in pregnancy is an extremely rare occurrence. In our clinic we have considered cured patients whose urines are negative for pus cells and bacteria when examined by wet preparation and stained sediment made from centrifugated concentrated urine specimens on at least three successive occasions at intervals of two weeks.

In all types of cases encountered cure of infection has been proved in only six cases. These are classed in regard to type of infection in table 1.

It is to be noted that cure in pregnancy is most apt to occur in the early months of pregnancy before pelvic

and ureteral dilatation take place. One cystitis in a multipara was cured late in pregnancy. One severe pyelitis of pregnancy was cured late in pregnancy.

PERSISTENT INFECTIONS FROM PREVIOUS PREGNANCIES

Fifty-three patients carried infection over between pregnancies into eighty-six pregnancies. Other pathologic conditions in addition to infection were present five times. Two were cortical abscesses in which operation was eventually done during pregnancy. Two cases showed stone, in both of which operation was eventually done between pregnancies; these patients were cured of infection and have had uninfected pregnancies since. One was a cystocele with residual bladder urine. One patient was thought at one stage to be cured in pregnancy but did not prove to be so. All eighty-six pregnancies were infected and renal infection was confirmed by typical symptoms, cystoscopy or both. The majority had intravenous or retrograde pyelography in one or all of the pregnancies.

From these data it seems almost certain that a patient who carries over an infection from a previous pregnancy into the next gestation will have an infected pregnancy.

RELATION OF CURE AND ABSENCE OF INFECTION IN SUBSEQUENT PREGNANCIES

For this study there are twenty-six cases available in which there has been infection of the urinary tract associated with pregnancy, which has been followed immediately by other pregnancies that have been free from infection. Sixteen cases were pyelitis of pregnancy, two of which recurred in the succeeding pregnancy before cure was effected; five were postpartum infections, three were only cystitis, due to constant drainage placed for atonic bladder conditions, and two were associated with other pathologic conditions (stricture) which was treated, and the infection cleared between pregnancies. In one of these the infection was afebrile, in the other severe.

Two of these cases belong to the group in which cure of the infection took place in the course of the first pregnancy. One was a preexisting infection, which disappeared during the first two months of the first pregnancy and remained absent through the second pregnancy; the other was an infection that had been present for two and a half years preceding the first pregnancy, gave rise to a pyelitis in pregnancy which was quite severe, yet disappeared in the eighth month and was followed by one uninfected pregnancy. In one case a cure in pregnancy was questionable but since a postpartum infection appeared on slight provocation the cure is not established.

Of the pyelitis cases, one was severe and was cured during pregnancy; another, associated with stricture, was severe in its onset but subsided, and the patient finished the pregnancy comfortably. The remainder were average cases of the disease.

Two of the postpartum cases were severe, one occurred seven weeks after delivery but was probably not an intercurrent infection. Three cases were mild.

In the three cystitis cases there was no fever.

One of the patients who had two infections in succeeding pregnancies had a severe condition with the first infected (seventh) pregnancy and an afebrile infection with the eighth, but remained uninfected with the ninth.

Seven cases occurred in a group of sixty-three patients in which there was cure of infection between

pregnancies but in which a pyelitis in pregnancy followed. This rate of recurrence is far above the normal incidence of infection in pregnancy, which is now accepted as somewhere about 1 per cent. Either the

TABLE 2—Cases of Infection of the Urinary Tract with Succeeding Pregnancy Free from Infection

Case	Infection	Parity										
		1	2	3	4	5	6	7	8	9	10	11
1	Cystitis	0	0	0	0	0	+	0				
2	Pyelitis	0	0	+	0							
3	Cystitis	0	0	0	0	0	0	0	0	0	+	0
4	Pyelitis	+	0									
5	Pyelitis			0	0							
6	Pyelitis	+	0									
7	Pyelitis	+	0									
8	Pyelitis	+	0									
9	Pyelitis	+	+	0								
10	Pyelitis	+	0	0								
11	Postpartum Infection	+	0									
12	Pyelitis	+	0									
13	Preexisting with pyelitis	+	0	Cured in pregnancy								
14	Preexisting	+	0	Cured in pregnancy								
15	Pyelitis	0	0	?	+	0	Probably postpartum after 3					
16	Cystitis	+	0									
17	Pyelitis	0	0	0	0	0	0		0			
18	Pyelitis	0	0	+	+	0						
19	Postpartum	0	0	0	0	0	+	0				
20	Pyelitis	0	0	0	+	0	Strictured ureter					
21	Pyelitis	+	0									
22	Pyelitis (afebrile)	0	0	+	0	Strictured ureter						
23	Postpartum	0	0	0	0	+	0					
24	Postpartum	+	0									
25	Postpartum	+	0									
26	Pyelitis	+	0									

cure was only apparent or there are other factors that should enter into the picture to explain recurrence of infection. We believe that the latter point of view represents the facts. Economic factors affecting both diet and work in care of the family, water drinking and general hygiene, and the anemias of pregnancy are suggested causal factors.

One patient with very serious pyelitis, with extreme dilatation of the right kidney, became pregnant within three months of the end of the preceding pregnancy.

TABLE 3—Parity in Which First Infection Appeared

Parity	Number of Cases
1	27
2	—
4	9
5	2
6	2
7	—
8	—
9	4
10	2
11	0
12	1
Total	63

but after cure had been effected. There was no infection in the pregnancy.

From these data it appears that cure during the course of pregnancy may occur after a severe infection with pelvic dilatation of considerable degree. Afebrile pyelitis may occur in association with stricture. A severe pyelitis in pregnancy may be followed by an afebrile infection in succeeding pregnancies. Close approximation in pregnancies may occur without infection in the succeeding pregnancies, if cure has been accomplished.

The important deduction to be drawn from such conflicting data is that the cure of the infection before the beginning of the succeeding pregnancies, even though special treatments or surgery are indicated to produce that result, is the essential consideration.

However, there are scattered cases encountered either when uninfected pregnancies intervene between infected pregnancies or when an infected pregnancy occurs in a series after cure between pregnancies has taken place.

TABLE 4—Cases of Recurrence of Urinary Infection in Pregnancy

Case	Parity														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	+	+	+												
2	0	0	0	0	0	0	0	0	0	+	+				
3	+	?	+												
4	0	+	+	+	+										
5	0	0	0	0	0	0	0	+	+	+					
6	0	0	0	0	0	0	+	+	+	0					
7	0	+	+	+											
8	0	0	0	0	0	+									
9	0	?	0	0	-	+									
10	+	+													
11	0	0	0	+	+	0									
12	+	+													
13	0	+	+												
14	0	0	0	+	-										
15	+	+													
16	0	0	0	+	+	-									
17	+	0	+												
18	0	0	0	0	0	0	0	+							
19	0	+	+												
20	+	+													
21	0	0	0	0	+	+	Stone with 5th								
22	0	0	+	+	+										
23	0	0	+	+	0	0	0	0							
24	0	0	0	0	0	0	0	0	+	+	Stone after 10th				
25	0	+	+	Cortical abscess 2d											
26	+	+	0												
27	+	+													
28	+	+	+	+	+	+									
29	0	0	0	0	0	0	0	0	0	+					
30	+	+													
31	+	+	+												
32	0	0	0	+											
33	+	+	+												
34	0	+	+												
35	0	0	+	+											
36	0	0	0	0	0	0	+	+							
37	+	+	0												
38	0	+	+												
39	+	+													
40	+	0	0	0	0	+									
41	0	0	0	+	0	+									
42	0	0	0	0	0	0	0	0	+	+					
43	0	0	0	0	0	0	0	0	0	0	0	+			
44	+	+													
45	0	0	0	0	0	0	0	0	+	+					
46	0	0	0	0	0	+	+								
47	+	+													
48	0	0	0	+	+										
49	0	0	0	0	0	0	0	0	+						
50	0	0	0	0	0	+	+								
51	+	+													
52	+	+													
53	+	+	+	+											
54	+	+													
55	+	+													
56	0	0	0	+	+										
57	+	+													
58	0	0	0	0	0	0	0	+							
59	+	+													
60	+	+													
61	+	+													
62	0	0	0	+											
63	0	0	0	+	+										

* An intercurrent pyelitis.

Yet such far greater numbers of cured patients have uninfected pregnancies follow, and infected pregnancies follow when uncured, that this relation is to be considered the logical sequence and the sporadic cases exceptions to the rule.

RELATION OF INFECTED PREGNANCIES IN A
SERIES OF PREGNANCIES

There are available sixty-three cases in which there have occurred 299 pregnancies, an average of 4.7 pregnancies per patient. The smallest number of pregnancies is two each, both infected, which occurred in seventeen cases. The largest number of pregnancies was twelve. Of these, 133 pregnancies were infected. Two of the patients had stone and one had cortical abscess. Stone appeared with the fifth pregnancy in one case and with the tenth in another. The cortical abscess appeared in the second pregnancy in a previously uninfected patient. In all cases the following pregnancy was infected also. One case was an intercurrent pyelitis between the second and third pregnancies which was probably not cured, because symptoms persisted although the third pregnancy was afebrile but the fourth was febrile.

Table 3 shows the time in the series at which the first infection appeared. No attempt is made here to indicate either the type of infection, its severity or whether cured between pregnancies, since only the relation of infected pregnancies to other pregnancies is the information desired. In four cases only one infection occurred in a series of ten or more pregnancies.

Of these multiple infections, primiparity marked the onset of the highest number of cases of any gestation. The complete list is given in table 3.

Table 4 shows graphically the location of the infected pregnancies in the series.

From table 4 it is apparent that there is a serial relation between infected pregnancies. There are only three assured cases in which intervening pregnancies were infected. In five cases there were other pregnancies that were uninfected following a series of infected pregnancies. In one of these there were four such pregnancies.

Whatever the factors concerned in producing infection, they appear to persist beyond the single pregnancy, since infected pregnancies appear to occur in series, even though the urine is clear of infection in the interval between pregnancies in some instances.

AFEBRILE INFECTIONS

In a series of multiple infections, some remain afebrile while others produce pronounced symptoms. It is generally recognized that severe pyelitis symptoms may and usually do usher in initial infections, yet such symptoms usually subside, the urine remains purulent throughout the pregnancy, and dilatation of the ureters and pelvis persists. Tolerance for infection seems to have been required. It is logical to assume that such tolerance for infection extends beyond a single pregnancy for the following reasons. Of 109 infected pregnancies occurring in fifty-two patients, the initial infection was a severe febrile reaction either as a pyelitis in pregnancy or a postpartum infection in forty-eight cases. In three the first infection was afebrile and in one, mild in character. In the four mild and afebrile cases infection was present for some time before the onset of pregnancy—nine years in the longest standing case and six months in the shortest.

Second infected pregnancies occurred forty-nine times, febrile fifteen times, afebrile twenty-six times and mild eight times.

Third infected pregnancies occurred nine times, two were febrile and seven afebrile.

There seems to be abundant evidence here to support the view that acquired tolerance for infection persists into subsequent pregnancies.

ASSOCIATION OF GROSS RENAL PATHOLOGIC
CHANGES WITH INFECTIONS OF THE
URINARY TRACT IN
PREGNANCY

Gross pathologic changes of the urinary tract is not common in the child-bearing period. Since universal pyelography was not done, no doubt many uninfected lesions were missed. Fifty-five cases of urologic conditions are recorded. The incomplete list in table 5 may serve at least to indicate the variety of lesions encountered.

Cystocele was a very uncertain quantity to estimate but was frequently encountered.

Of this group of "other lesions," all the stone cases except one, all the hydronephroses, strictures and the polycystic kidney were infected during pregnancy.

The malformed ureters and unrotated kidneys were uninfected.

TABLE 5—Variety of Lesions Encountered in Series

Condition	No of Cases
Calculus (renal 7 ureteral 5)	12
Tuberculosis (chronic 5, acute in pregnancy 1)	1
Hydronephrosis (unilateral 1 bilateral 2)	3
Congenital malformations (unrotated kidney 2 congenital ureter 1 double ureter 1)	4
Strictured ureter	3
Hematuria (unexplained)	3
Endocervicitis (gonorrheal)	4
Cortical abscesses	2
Carbuncle of kidney	1
Incontinence	3
Papilloma	1
Polycystic kidney	1
Retroversion of pregnant uterus with acute retention	1
Uolds standing (retroversion)	1
Frequency (trigonitis)	4
Ovarian cyst with bladder symptoms	1
Back strain with bladder symptoms	1
Renal pain before during and after pregnancy probably explained by ptosis	6

While hematuria has been the initial symptom of pyelitis of pregnancy, on nine occasions hemorrhage from the kidney occurred three times in cases in which there was no other cause assignable except pelvic and ureteral dilatation of the normal type found in pregnancy.

When infection occurred in association with gross pathologic changes it persisted through succeeding pregnancies (with one exception, cystocele) until the underlying condition was remedied and was not always cured then, as in some stone cases. The polycystic kidney remained infected over a period of five years but eventually cleared. The patient had been sterilized soon after the condition was discovered.

It is our practice to correct underlying gross pathologic changes immediately in the course of the pregnancy when conditions demand, but preferably in the intervals between pregnancies. In patients in poor condition it seems wiser to interrupt the pregnancy and make the surgical correction between pregnancies.

It is to be noted that not all gross pathologic conditions become infected during pregnancy.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs WALTHER AND WILLOUGHBY AND
DRs CRABTREE AND PRATHER

DR A I FOLSOM, Dallas Texas These two interesting papers give accurate analyses of the sources of urinary infections in pregnant women. Less is known about urinary infections in pregnancy than about anything else in urology. Certain factors seem to indicate that the question of pressure, so far as obstruction is concerned, does not play as great a part as has been thought. I am particularly interested in the part played in these conditions by the posterior portion of the urethra. Drs Crabtree and Prather recite a number of cases of cystitis. As a rule they are instances of a long-standing urethritis and not pyelitis. The extension into the bladder is a secondary process. Professor Lichtenstein called attention to the close association between lower urinary tract infection and upper urinary tract infection in men. This is well recognized, but little attention has been paid to the same condition in women. In autopsy specimens in the female bladder I found a large number of papillary masses. This is not a passive thing but a real papillary obstruction, an active inflammatory condition. In the base of the mass there is an active inflammatory area. In some cases the picture is almost identical with a collaret prostate. In some there is a compound structure with many branches, but the long-standing infection produces the collaret appearance just as it is found in the prostate. The long-standing latent infection in these cases is understandable. These infections in the female urethra are aggravated during pregnancy. It does not take much imagination to see that the passage of the head through the birth canal will traumatize tissues and produce trouble. These tissues are composed not of cysts but of definite gland structures, and this focus of inflammatory tissue at the neck of the bladder in pregnant women becomes activated, produces a large amount of irritation and in many instances leads to an infection which ascends through the lymphatics to the kidney.

DR G C PRATHER, Boston This idea of secondary infection being due to traumatism of an infected cervix or of a urethral obstruction, according to Dr Folsom, offers a possible explanation concerning etiology. Many women have an elevation of temperature post partum. The obstetrician reports that there is some infection with pus cells present in the urine, and he wishes to know whether this comes from urinary tract infection or not. These cases offer an interesting problem and, when the fever continues, cystoscopic examination gives extremely valuable information. I do not hesitate to obtain a pyelographic diagnosis in these patients, believing that a continued elevation of temperature from the upper urinary tract, in the absence of an enlarged uterus, indicates a condition that can be improved by cystoscopic or surgical procedures. While our limited experience with pyridium in ambulatory cases was not encouraging, I feel inclined to regard the favorable report of Dr Walther seriously, for it seems to me that 3,000 cases observed for a sufficient period of time offer adequate data for conclusions. An incidence of postpartum kidney infection of 14 per cent during the period 1925-1929 was mentioned. In our first series the incidence of that condition at the Boston Lying-In Hospital was 0.4 per cent of pyelitis in the entire hospital. During the last four years, with more vigorous care, the proportion of postpartum pyelitis has been reduced to 0.25 per cent. The average of only five days of fever after the beginning of cystoscopic treatment in these patients, either by kidney lavage or by constant ureteral drainage, I believe is very creditable as well as having nearly 50 per cent of the patients with urine normal before leaving the hospital. We do not repeat the cystoscopic procedure in our postpartum series, after the temperature has become normal, until from three to four months has passed, believing that a definite number will clear the urine of bacteria and leukocytes in that time on a forced fluid regimen. If they are not normal by the end of that time they are investigated urologically and treated more actively. In regard to the fact that these ureters and kidneys shrink down quickly after delivery, one observation is interesting, and that is that they do not regain their sensory qualities very quickly as can be shown by injecting

from 15 to 25 cc through a No 9 catheter without pain into the postpartum kidney pelvis, which has a normal pyelographic appearance. In other words, these kidneys have shrunk down but have not regained full sensation.

DR ANSON L CLARK, Rochester, Minn The authors of these papers have focused attention on a condition that should be treated with much closer cooperation between obstetrician and urologist than it has been in the past. Drs Crabtree and Prather have brought out clearly that cases of infection of the urinary tract which do not recur in subsequent pregnancies are those which have been entirely cleared up following termination of the previous pregnancy. From a urologic standpoint it would seem that, when a patient has had a history of pyelitis in pregnancy, careful bacteriologic study of the condition during the postpartum period should be made. Frequently, considerable attention is paid to the condition and position of the uterus during this time, but often careful bacteriologic examination of the urine is neglected. Six or eight weeks following delivery, sufficient general physiologic recovery of the urinary tract would have taken place to warrant microscopic examination of a stained smear of the catheterized urine and a culture of urine. At this time, should the infection still be present it would seem to indicate a more concentrated attack entirely to dislodge the infection, which in many cases is practically asymptomatic after such an interval has elapsed. In confirming the belief of Drs Walther and Willoughby that the possibility of extension from the cervix has been neglected, the work of Richards, reported in THE JOURNAL Oct 29, 1932, is of interest. He has proved that transient bacteremia is much more common than it usually is considered to be. Immediately following trauma to possible foci of infection the organism was yielded by cultures of the blood in from 10 to 20 per cent of the cases. One hour later blood cultures in practically all the cases, excepting those involving the tonsil as a focus, were negative. If one is to believe that the hematogenous route of infection is to be considered in infections of the urinary tract, this work is extremely interesting. I cannot agree with Walther and Willoughby in their recommendations as to the use of pyridium. Gillespie, in his work with Helmholtz, has conclusively proved that pyridium in aqueous solution is bactericidal but that pyridium in a solution of urine at stronger concentration than it is possible to pass through the urinary tract is not bactericidal. This was confirmed by Edwin Davis one year ago. I would urge that, in the majority of cases of postpartum infection, inhibition of the growth of the offending organism be effected before investigation by ureteral catheterization, which might cause trauma, is instituted. Marked acidification of the urine by either ammonium nitrate or ammonium chloride given orally would seem advisable before deciding that drainage by catheter of the upper part of the urinary tract is necessary. My experience has shown numerous cases in which too early catheterization of the upper part of the urinary tract, in the presence of a virulent infection, has led to complications rather than to amelioration of the condition.

DR J I HOFBAUER, Baltimore More emphasis should be placed on atony of the ureter during pregnancy, rather than dilatation. I cannot understand how the ureter may be supposed to dilate during early pregnancy by reason of uterine pressure, as the ureter does not come in contact with the uterine wall to any extent in the early months of pregnancy. Lowering of the surface tension of the blood primarily accounts for ureteral atony in pregnant women. An excellent piece of work, recently published by the Mayo Clinic, in corroboration demonstrates decrease of tone of the biliary ducts during pregnancy. During the sixth and seventh months of pregnancy, when the ureter comes in close contact with the uterus, the atonic ureter is displaced outward. The juxtavesical portion of the ureter does not dilate in normal pregnancy but it may dilate in cases of pyelitis in pregnancy. Infection adds another element for the occurrence of atony, and this is demonstrable on the screen. Why does the right ureter more often show dilatation during pregnancy than the left? In my opinion this is due to the fact that the uterus, as a rule, lies in definite torsion to the right. Realizing that in the later months of pregnancy, owing to the formation of the lower uterine seg-

ment, the bladder is pushed forward and to the right, I feel that the left ureter is put on a stretch while the right ureter angulates at the point where it traverses the parametrium. Why is it that pyelitis does not occur in every case of ureteral dilatation, in the presence of bacteria? The third determining factor is the lowering of the resistance of the organism. My studies have shown that in pregnant women there occurs a lowering of resistance to *B. coli* in about nine out of a hundred cases. The same phenomenon occurs in women following labor when there is excessive loss of blood. With the idea of possibly preventing the occurrence of pyelitis by stimulating the peristaltic activity of the ureter, I now give pregnant women from the fifth month of pregnancy on calcium and potassium citrate in large doses and twice a week ephedrine orally and have reduced the occurrence of pyelitis to about $\frac{1}{3}$ per cent.

DR E. G. CRABTREE, Boston. There was no doubt that the cases to which Dr Folsom referred were cases of cystitis without involvement of the upper urinary tract. Absence of upper urinary tract infection while not proved in every case, was demonstrated in some. Residual urine during the course of pregnancy has been mentioned. After several years of following our cases in this regard we do not find residual urine except in rather unusual conditions and when there is a cystocele. Dr Hofbauer has brought up many interesting questions. I assign a double cause for the dilatation of the ureter and pelvis in pregnancy. This is atony of the ureter and pelvis as a result of endocrine changes due to pregnancy and pressure applied by the uterus at the brim of the pelvis. It may be recalled that Jacoby a number of years ago contended that the whole body of the pregnant woman undergoes loss of tone. This loss of tone in the ureter and pelvis undoubtedly takes place throughout its course, yet only that portion of the ureter dilates which is situated above the point of pressure at the brim of the pelvis. Hypertrophic conditions which Dr Hofbauer has accurately reported, at the uretero-vesical junction and lower part of the ureter do occur but I do not believe that they play much part in the production of the dilatation because as indicated by Kretschmer, the lower portion of the ureter does not as a rule, take part in the ureteral dilatation. I explain lateral displacement of the ureter by recalling that the ureter is more adherent to the peritoneum than to the postuterine tissue, therefore peritoneal stretching will carry the ureter beyond its normal position.

DR H. W. E. WALTHER, New Orleans. The trail blazers in the field of postpartum urinary sepsis have been Hofbauer, Crabtree and Prather, and I wish to pay them respectful tribute. It has been the stimulating tenor of their work that has encouraged us to carry on with our study. We shall continue our work with pyridium in order to report later whether we feel the same as some do or whether we shall retain our present high regard for this dye antiseptic. Certainly no convincing evidence has yet been advanced to show that pyridium, when administered in proper dosage and over a sufficient period of time, is not therapeutically effective. Davis attempted to solve this problem by showing that bacteria would grow in the voided urine of normal medical students who had taken various dyes by mouth. Helmholtz substitutes rabbits for test tubes. Neither of these studies proves anything of clinical value. Physicians are not called on to treat test tubes or rabbits. Admitting the intricacy of investigations in dye therapy we do not feel that the final evaluation of pyridium will be settled in the laboratory.

Observational Ability.—Diagnostic success at the bedside may be held to depend firstly upon the historical analysis and secondly upon our personal powers of observation both of which are subject to the continual leaven of experience. Nothing is so variable as observational ability. Some have it well developed from childhood, men of the naturalist type. Some never acquire any facility for it and repeatedly miss the clue. The majority cultivate their aptitudes by degrees and at a middle level. Most of us improve with time and practice but many take but little pains to refine and to register experience and for this reason retard their progress in the clinical arts.—Rule I A. The Training and Use of the Senses in Clinical Work. *Guy's Hosp Gaz* 47:421 (Oct. 28) 1933.

PATHOLOGIC PHYSIOLOGY OF TERATOMA TESTIS

RUSSELL S. FERGUSON, M.D.

NEW YORK

Observations pointing to the direct relation of specific tumors to certain ductless glands are increasing. To this number the relation of teratoma testis to the anterior lobe of the pituitary may now be added.

Since December, 1930, there have been observed at the Memorial Hospital 117 consecutive cases of tera-

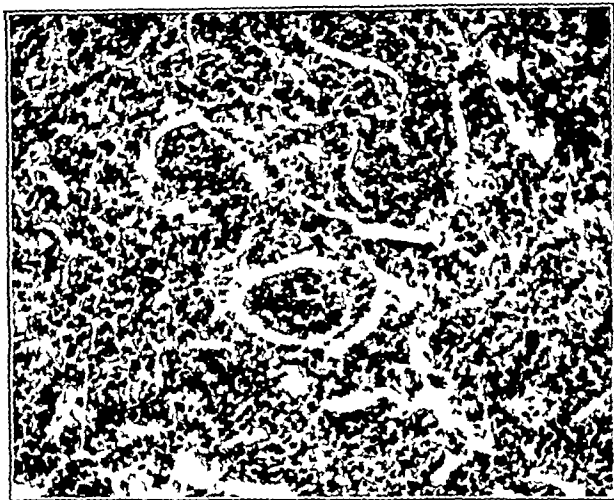


Fig 1—Teratoma of the testis. Embryonal adenocarcinoma.

toma testis in which the quantitative excretion of prolan A (the follicle-ripening hormone of the anterior pituitary body) has been determined by multiple observations. The technic of the quantitative modification

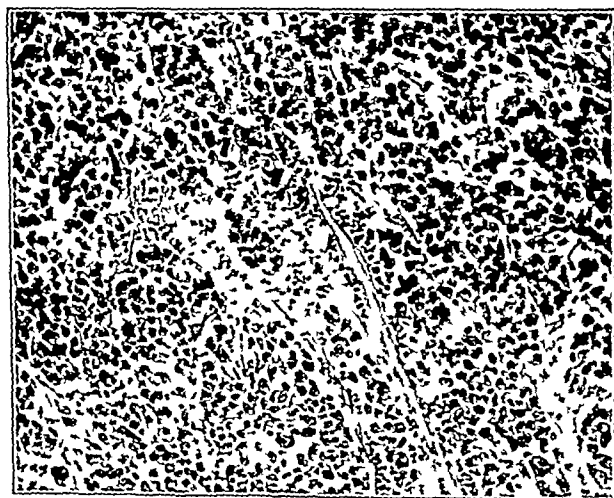


Fig 2—Teratoma of the testis. Embryonal carcinoma with lymphoid stroma.

of the Aschheim-Zondek test¹ has been published elsewhere and need not be repeated at this time.

From the Memorial Hospital.
Read before the Section on Pathology and Physiology at the Eighty Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.
1. Aschheim, S. and Zondek, B. Klin. Wochenschr. 10:4, 1928.
Ferguson, R. S., Downe, H. R., Ellis, F. and Nicholson, M. F.
Am. J. Cancer 15:83 (April) 1931. Ferguson, R. S. Ibid 18:269-6, 1933.

In all the cases in this series in which the tumor had been unaffected by treatment, prolan A was found in the urine in varying amounts. The factors which determine the urinary excretion of prolan A are as follows: (1) the embryonal character of the tumor, (2) the extent of the disease and (3) the effect of treatment.

OBSERVATIONS

No cases of chorionepithelioma of the testis appear in this series. On the basis of the published observations of Heidrich, Fels and Mathias - and comparable observations in cases of chorionepithelioma of the

uterus, it is safe to assume that this tumor will cause the excretion of prolan A in the urine in excess of 50,000 mouse units per liter. In this series there were seven cases of embryonal adenocarcinoma of the testis which were uninfluenced



Fig 4—Teratoma of the testis, adult type.

It will be seen therefore, that the quantitative excretion of prolan A is a definite indication of the structural type of the tumor. In fact, the limits reached by each type overlap so little that it is possible to make the diagnosis on the basis of this determination alone. It has been observed repeatedly in this series that tumors of like structure vary with the extent or mass of the disease. For example, in a case of embryonal carcinoma with lymphoid stroma, without metastases, the excretion of prolan A may be only 2,000 units per liter. In a second case with widespread metastases the

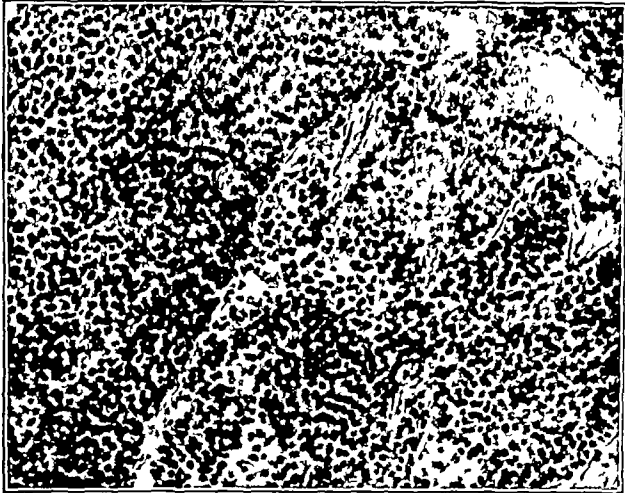


Fig 3—Teratoma of the testis seminoma type

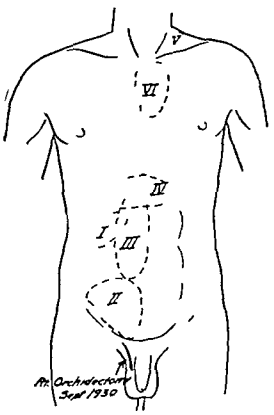
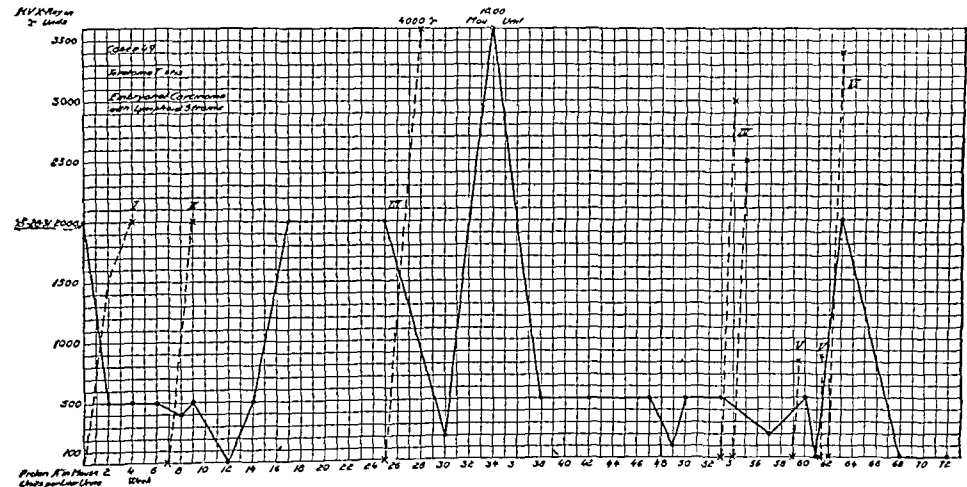


Fig 5—Patient F S. Embryonal carcinoma with lymphoid stroma. The solid line indicates excretion of prolane in mouse units per liter. The dotted line indicates irradiation in roentgens. The Roman numerals indicate treatment directed to recurrence of the same number as in the diagram.

by treatment at the time of the first assay of the urine. The excretion of prolane ranged from 10,000 to 40,000 mouse units per liter in each case (fig 1). In fifteen cases of embryonal carcinoma with lymphoid stroma, uninfluenced by treatment, the output of hormone varied from 2,000 to 10,000 mouse units per

excretion may reach 10,000 units per liter³. Likewise, wide fluctuations have been observed in the same case. With a small mass of tumor the output in case 49 was only 2,000 units per liter, later, when widespread metastases were present, the output reached 10,000 units of prolane A per liter of urine (fig 5).

2 Heidrich L Fels E and Mathias E Beitr z klin Chir
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3 Ferguson, R S S Clin North America 13 483 487 (April)
1933

THE EFFECT OF TREATMENT

Observations on the effect of treatment on the excretion of prolan A in teratoma testis are practically confined to the effect of irradiation. The 117 patients in this series were treated by means of high voltage roentgen therapy or radium element pack. In 5 cases the excretion of prolan A was unaffected by maximum doses of radiation. In such instances the prognosis is bad and these patients are either dead or dying (fig 6)

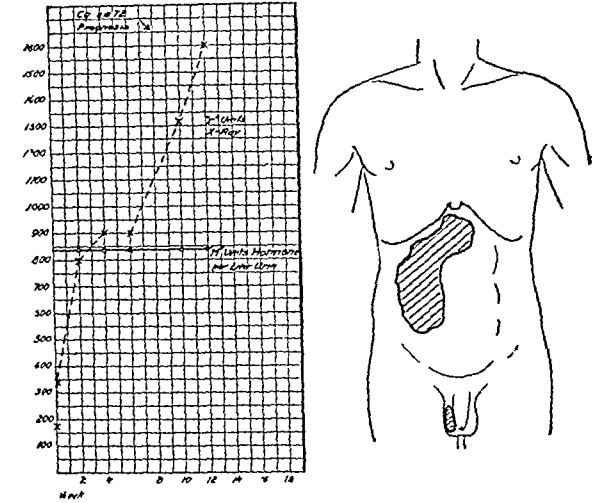


Fig 6—Patient I A Excretion of prolan A unaffected by high voltage x rays. Prognosis bad

In the majority, however, irradiation of the primary tumor or its metastases caused a drop in the excretion of prolan A in the urine, the rapidity and extent of which are good indexes of the radiosensitivity of the tumor, and reliable factors on which to base the prognosis. In case 71 the rapidity of the drop in excretion of hormone and the effect of the irradiation on the tumor are shown in figures 7 and 8

With respect to the surgical removal of the primary tumor in cases without metastasis, if the presence of a measurable output of prolan A before operation may be assumed, the prolan is known to be absent as soon as seven days after operation

As already observed, irradiation of the primary tumor and its metastases causes a decrease in the excretion of prolan A in most instances. In these cases there is a coincident decrease in the size of the tumor and its metastases and in favorable cases a total disappearance of the same. In three instances the pituitary gland has been irradiated, and while there was an easily demonstrable reduction in the excretion of prolan A in the urine there was no measurable reduction in the size of the tumor or its metastases. At the same time it could not be said that the tumors increased in size.

RECURRENCE AND METASTASIS

The effect of recurrence and metastases on the excretion of prolan A has been observed repeatedly. The metastatic lesions of teratoma distribute themselves in the abdominal and mediastinal lymph nodes and through the venous circulation into the lungs. In these locations it is difficult to detect their presence early by clinical methods. In all of the recurrent cases in this series an increase in the excretion of prolan A in the urine was observed anywhere from two weeks to three months before the metastatic lesions became clinically demonstrable (fig 5)

PHYSIOLOGIC EFFECT OF PROLAN A ON GENITAL EPITHELIUM

The increased secretion of prolan A occasioned by the presence of a teratoid tumor in the host produces profound changes in the genital epithelium of young subjects. Ten cases in this series came to autopsy. In each there was an easily demonstrable hyperplasia of the epithelium in the prostate and seminal vesicles. This reached such proportions, in cases succumbing with a high output of prolan A, that the prostate was indistinguishable from that of the benign hypertrophy of old age, except for the fact that the muscle and stroma took little part in the hyperplasia (figs 9 and 10). In the opposite testis of such cases there is a constant hyperplasia of the interstitial cells with atrophy of the seminal epithelium (fig 11). The pituitary body constantly shows the basophilic hyperplasia typical of pregnancy (fig 12)

Prolan A has been demonstrated in the tumor tissue in all the cases in which autopsies have been made. The amount is usually comparable with that found in the urine just before death.

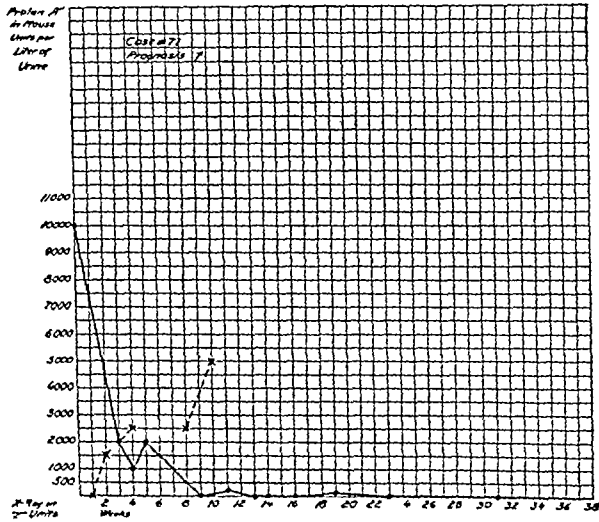
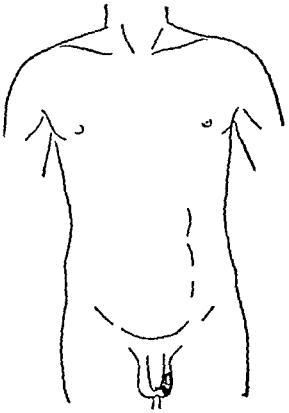


Fig 7—Patient H S Prompt disappearance of prolan A from the urine in a radiosensitive teratoma of the testis. Prognosis good



COMMENT

The cause of the appearance of prolan A in the urine of patients with teratoma testis is a subject for speculation. The most likely possibility presumes that the origin and growth of the embryonal tumor produce a hormone, not yet identified, that stimulates the anterior lobe of the pituitary body to secrete an increased amount of prolan A. In support of this contention, the identical structural changes observed in the anterior

4 Ferguson R S. Am J Roentgenol 29:444 (April) 1933

lobe of the pituitary body in cases of normal pregnancy, chorionepithelioma in the female, teratoid tumors in the male and certain other neoplastic diseases accompanied by high outputs of prolan A in the urine may be cited. The hyperplasia of the basophilic cells of the anterior lobe is a characteristic feature in all of these cases. Zondek,⁵ in a recent paper, has produced exact evidence tending to prove that the basophilic cell of the anterior lobe is responsible for the secretion of prolan A. Further, roentgen irradiation of the pituitary body in

has been shown by Zondek with direct tumor transplants, and by me with tumor extracts, that these tissues contain more prolan A than can be found in an equal volume of blood. It is here shown that irradiation of the primary tumor or its metastases causes a decrease in the excretion of prolan A in the urine. Irradiation of the hormone *ex vivo* is without effect. The total disappearance of the hormone from the urine coincides with the clinical disappearance of the tumor and its metastases, without any treatment having been directed at the pituitary body. The hormone reappears in the urine whenever the tumor recurs. This would seem to prove that the tumor requires prolan A as an essential to growth, and that the tumor actually produces a precursor which stimulates the anterior lobe of the pituitary body to secrete prolan A. In further support of the main theory and its corollary is the evidence herein deduced that the quantitative production and excretion of prolan A are in direct proportion to the growth rate of the tumor, since the more rapidly growing embryonal tumors cause the production of larger amounts than the more adult types.



Fig 8—The tumor from case 71 (fig 7) removed six weeks after completion of irradiation. Note entire destruction of this radiosensitive teratoma.

cases of teratoid tumor of the testis causes a temporary decrease in the excretion of prolan A in the urine. The beneficial results of preliminary irradiation of the pituitary body in cases of corpus carcinoma, as reported



Fig 10—Hypertrophy and epithelial hyperplasia of the prostate (Autopsy patient N. D.).



Fig 9—Hypertrophy of the seminal vesicles with the true epithelial hyperplasia due to the sex hormone of the anterior hypophysis (Autopsy Patient N. D.).

by Voltz to the League of Nations Committee would appear to be predicated on the fact that, in many of these cases excessive amounts of prolan A are secreted in the urine (Zondek⁶).

This theory also agrees with a corollary which has many ramifications, namely that prolan A is essential to the growth of embryonal tumors of the testis. It

To one directly engaged in such studies the conclusion is inescapable that the biologic approach to the study of the disturbed endocrine physiology of the tumor host is a fertile and until recently untilled field of cancer research. That this conclusion is not unwarranted in fact is shown by the present study and by the work of Jaffe and others on the relation of the parathyroid to osteitis fibrosa and by unpublished studies from this laboratory which show a direct relation between the middle lobe of the pituitary body and melanoma. The practical applications of such studies to diagnostic methods and the control of therapy are suggested in the results herein reported.

SUMMARY

- 1 The factors determining the quantitative excretion of prolan A in the urine in 117 cases of teratoma testis are briefly enumerated.
- 2 It is shown that the excretion of prolan A is determined by the embryonal character of the tumor, the extent of the disease and the effect of treatment.
- 3 The effect of recurrence and metastasis on the excretion of prolan A in cases of teratoma testis is described.

5 Zondek, B. Klin. Wchnschr. 12: 22-25 (Jan. 7) 1933.
6 Zondek, B. Klin. Wchnschr. 11: 274-279 (Feb. 13) 1932.
Monatschr. f. Geburtsh. u. Gynak. 89: 370 1931.

4 The structural and physiologic changes in the prostate, vesicles, testes and pituitary body of the tumor host are enumerated

5 The significance of the foregoing findings is discussed

ABSTRACT OF DISCUSSION

DR FRANK W. HARTMAN, Detroit The constant application and refinement of these tests are more important than the original application and discovery I should like to ask

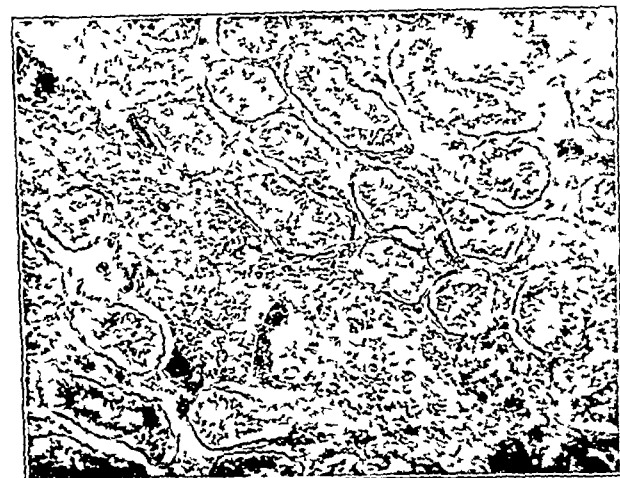


Fig. 11—Hyperplasia of Leydig's cells in the remaining testis (Autopsy patient N. D.)

Dr. Ferguson the details of his test what animals he uses whether he has to concentrate the urine and a few practical points that would be of great interest to all

DR R. S. FERGUSON, New York The details of the quantitative technique are rather lengthy They appear in the

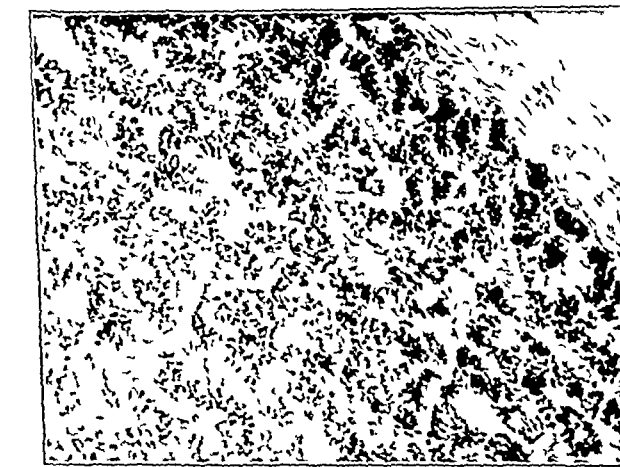


Fig. 12—Anterior lobe of the pituitary showing basophilic hyperplasia (Autopsy patient N. D.)

June issue of the American Journal of Cancer The whole procedure is totally useless and will come into immediate disrepute if observers insist on doing qualitative tests for prolan A and on finding nothing state that the whole procedure is useless No qualitative Aschheim Zondek test on rabbits rats mice or any other animal is sufficient to demonstrate less than 2,000 units per liter as a gross reaction Therefore more than 99 per cent of the value of the work will be immediately lost because one third of the tumors do not secrete 2,000 units per liter yet that is not to say that they do not secrete prolan A

it is to say that it has not been found I would emphasize that the quantitative method, making an extract of the urine and assaying the extract down to quantities as low as 100 units per liter is essential to results Likewise, in studying teratoma, it is essential to make repeated examinations, week after week as the cases are under treatment

CUTANEOUS ULCERS TREATED BY THE SULPHYDRYL CONTAINING AMINO-ACID CYSTEINE

LOUIS A. BRUNSTING, M.D.
AND
DAISY G. SIMONSEN, Ph.D.
ROCHESTER, MINN.

The treatment of cutaneous ulcers by sulphhydryl compounds is a clinical application of the investigations of Hammett¹ and of Hammett and Reimann² who found, in a long series of experiments on plants, lower animals and man, that there is a positive correlation between the sulphhydryl (SH-) group and cellular activity. Reimann³ reported favorably on the treatment of obstinate cutaneous ulcers by means of thiocresol, which contains sulphhydryl attached to the benzene nucleus. Dressings were saturated with a solution of thiocresol, diluted 1:10,000, and applied to the wounds for periods of a few days, alternating with bland treatment for a similar period. There were distinct spurts of healing during the time the thiocresol was applied, as shown by epithelial growth and a change in the character and amount of granulation tissue.

Following the separation of glutathione in crystalline form, Kendall⁴ suggested to us the use, in a similar practical fashion, of this naturally occurring substance which contains sulphhydryl. Reduced glutathione contains the sulphhydryl group in the form of the amino-acid cysteine, together with glutamic acid and glycine. Glutathione is found in all living tissues and probably plays an important part in cellular metabolism in regard to the activation of enzymes.⁵

We applied reduced glutathione to certain types of cutaneous ulcers and noted a definite stimulation of growth in the treated portions. On account of the expense involved, it was considered impracticable to carry on the extensive use of glutathione, once the academic question of its usefulness had been settled, and for that reason the amino-acid cysteine was substituted. This report deals with the experience gained in a period of three years of the practical use of cysteine in the treatment of selected cases of cutaneous ulcer in the Mayo Clinic, both in ambulatory and in hospital practice.

Read before the Section on Dermatology and Syphilology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

From the Section on Dermatology and Syphilology, the Mayo Clinic (Louis A. Brunsting) and work done (Daisy G. Simonsen) while a Fellow in Chemistry, the Mayo Foundation.

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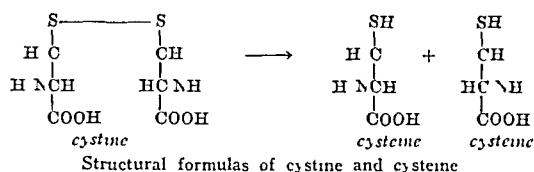
3. Reimann, S. P. Use and Reasons for the Use of Thiocresol to Stimulate Wound Healing. *J. A. M. A.* 54: 1369-1371 (May 3) 1930.

4. Kendall, E. C., McKenzie, B. F. and Macon, H. I. A Study of Glutathione. I. Its Preparation in Crystalline Form and Its Identification. *J. Biol. Chem.* 84: 65-67 (No. 1) 1929.

5. Kendall, F. C. Personal communication to the author.

PREPARATION OF CYSTEINE AND METHOD
OF APPLICATION

Cysteine was prepared by the method of Gortner and Hoffman⁶ from the hair of man. Such keratin-containing structures as hair, nails, hoofs, horns and sheep wool are particularly rich in sulphur, most of which is present in the form of the disulphide cystine.⁷ By hydrolysis, hair is converted to cystine, when it is reduced by tin and hydrochloric acid to cysteine hydrochloride. Cysteine (SH⁻) is readily oxidized to cystine (S-S) by exposure to air but can be kept indefinitely in the form of the hydrochloride.⁸



Cysteine was made up in a concentration of 0.5 per cent, the solution containing equal parts of physiologic solution of sodium chloride and distilled water. The hydrochloric acid of the cysteine hydrochloride was neutralized with sodium hydroxide to a pH of 7.0. One gram of cysteine hydrochloride requires 6.35 cc of normal sodium hydroxide or its equivalent. The neutralized solution should be used within twenty-four hours, however, in well filled bottles we were able to keep it in refrigeration for several days without much loss. Dressings were changed twice daily, or more often if there was much drainage.

In our experience, cysteine is not only fully as efficient as thiocresol in stimulating qualities, but it possesses two decided advantages from a practical standpoint. It is without the unpleasant, penetrating odor resembling burnt rubber, common to all volatile sulphhydryl compounds. Furthermore cysteine is less irritating than thiocresol to the surface of skin adjoining the ulcers. The wet dressings, of course contribute to a certain degree of soggy in either case unless care is taken to alternate the treatment with periods of drying.

OBSERVATIONS

More than 200 patients were subjected to treatment by cysteine, a varied assortment of ulcerative lesions were represented. The most common were varicose ulcers usually associated with varicose veins. Most of these had resisted routine measures of treatment and were of a chronic, indolent type. Treatment with cysteine was used alone or in conjunction with measures concerned with relieving the static edema, such as supportive bandages, or obliterating injections into the varicose veins. In dressings of cysteine, when applied to ulcers about the lower parts of the legs, firm pressure was usually exerted by means of a soft rubber sponge incorporated in the elastic bandage that was wound from foot to knee. In a number of cases of bilateral involvement the following procedure was employed. The basic treatment of the ulcers of both legs was the same throughout, but for a time cysteine would be added for treatment of the ulcers on one leg, then the cysteine would be omitted in treatment of that leg and applied in treatment of the other. Whenever cysteine was employed, the ulcers to which it was applied advanced toward healing more rapidly than

those on the other leg. Thus, a system of alternate control allowed adequate evaluation of the effect of cysteine.

Certain traumatic ulcers, variously situated, were treated with cysteine. The following case is illustrative.

CASE 1—A girl, aged 18, sustained a deep laceration of the posterior aspect of the upper part of the right arm, the result of an automobile accident, July 4, 1930. After preliminary debridement, the fascia and skin were approximated by silk and dermal sutures. About half of the incision failed to heal, and a raw necrotic wound remained. When treatment by cysteine was begun, August 4, there was a large ulcer, fairly clean representing a denuded area measuring about 5 by 15 cm. Within twenty-four hours there was evident a striking degree of stimulation of the hitherto dormant granulation tissue and of the epithelial margins of the wound. Cysteine was used intermittently for three or four days at a time, alternating with ointments of weak balsam of Peru for a similar time. Within twenty-one days epithelization was complete (figs 1, 2 and 3). The epithelium was rather thin probably because of its rapid growth, after six weeks a small vesicle appeared, and a slight break of the covering of the surface. Cysteine was applied for four or five days and healing was complete. There was no further trouble.

In postoperative wounds, the stimulating properties of cysteine were valuable. One such case is illustrated by the following report.

CASE 2—A man, aged 45, was seen thirty-seven days after posterior gastro-enterostomy for chronic duodenal ulcer. The abdominal wound had healed except for a residual sinus 2 cm.



Fig 1 (case 1)—Traumatic ulcer of the upper part of the right arm before treatment

long 1 cm wide and 2 cm deep. There was considerable seropurulent exudate and the granulation tissues were pale. A probe revealed the cutaneous margins to be undermined about 2 cm in all directions. Routine measures, including treatment by stimulants and by ultraviolet rays from the mercury vapor arc in quartz for three weeks, had brought about little change in the size or appearance of the wound. Within forty-eight hours after application of dressings of cysteine were begun, drainage practically ceased, granulations became red and exuberant, and within fourteen days healing was complete.

In the care of decubital and trophic ulcers we found cysteine to be useful, although of limited application. In these types of intractable ulcerations, treatment by local measures is usually handicapped by disturbances of the general health. However, there was a certain amount of stimulation of granulation tissue following application of cysteine, and secondary bacterial overgrowth was inhibited. In several cases of decubital

6 Gortner R A. and Hoffman W F. L Cysteine in Marvel C S. Organic Synthesis New York J Wiley & Sons Inc 1925 vol 5 p 39.
7 Lewis H B. Sulfur Metabolism Physiol Rev 4 394 423 (July) 1924.
8 Marston H R. The Chemical Composition of Wool with Especial Reference to the Protein of Wool Fiber (Keratin) Australia Council for Scientific and Industrial Research Melbourne Bull 38 1928.
9 Marston H R. and Robertson T B. The Utilization of Sulfur by Animals Australia Council for Scientific and Industrial Research Melbourne Bull 39 1929.
10 Brown Herman and Klauder J V. Sulphur Content of Hair and of Nails in Abnormal States. Therapeutic Value of Hydrolyzed Wool I. Hair Arch Dermat & Syph 27 584 604 (April) 1933.
11 Cysteine hydrochloride is obtainable from Eastman Kodak Company Rochester, N Y.

ulcers, cysteine applied at intervals apparently shortened the period of hospitalization

In carbuncles, after suppuration, cysteine is efficient in promoting the growth of granulation tissue. There is usually more prompt sloughing of the necrotic sphacelus and a cleaner base when cysteine is used. In three instances of extensive carbuncle of the neck and back, such treatment contributed to the earlier and successful use of skin grafts, and to healing of the wounds with a minimum of deformity.



Fig. 2 (case 1)—Appearance of ulcer treated by cysteine after fourteen days

In extensively denuded surfaces, such as occur in burns from gasoline, the securing of satisfactory epithelization without disabling deformity presents a problem. If multiple pinch skin grafts are applied to the denuded surface, there is a higher percentage of successful "takes" when cysteine is used. The dressings are applied to the granulating surface before grafting and to the grafted regions at intervals following, using perforated protective strips to prevent mechanical displacement of the grafts. Case 3 is an example.

CASE 3—A man aged 24 was severely burned by an explosion of gasoline, Aug. 30, 1929. He was admitted to the Mayo Clinic in the spring of 1930 critically ill with legs and hands covered with old burns of second degree. Treatment was carried out by prolonged immersion in warm baths and other supportive measures. The patient was in poor condition and frequent transfusions of blood were given. Progress was slow, and was interrupted by febrile periods which probably were due to the secondary infection in the extensively denuded regions. By the middle of July there was sufficient general improvement to warrant application of stimulating measures to the ulcers of the legs. Cysteine was applied to the left thigh as a trial with prompt stimulation of the granulation tissues resulting. Within from ten to fourteen days a few islands of epithelium had appeared and drainage from the treated surface was at a minimum. Cysteine was used in various portions of the wounds as the patient's condition permitted the use of wet dressings. In December seventy-five pinch grafts were applied with unsuccessful results. This procedure was repeated and cysteine was applied over half of the grafts. There was decided improvement in the region to which cysteine had been applied. Granulations were richer and the grafts were more successful than in the untreated portions. In this fashion the right leg became completely healed by January, 1931. In March 120 grafts were made to the left leg posteriorly and anteriorly. Cysteine was applied over perforated strips smeared with petrolatum placed over the fresh grafts. Treatment by stimulation was continued intermittently until May 11, at which time healing was almost complete. The patient was dismissed in August, 1931. From that time one year later reversed

in excellent epithelial covering with little deformity. This case is a good example of the usefulness of cysteine in clearing secondary infection to permit of skin grafting in extensive wounds.

In such conditions as roentgen ulcers, one would expect little benefit from stimulating preparations. However, we have observed that in such wounds if residua of epitheliomatous degeneration have been removed by cautery, healing is perhaps accelerated when cysteine is used at intervals, especially when skin grafts are a part of the reconstructive procedure.

Several scrofulous sinuses, Bazin ulcers and nodulo-ulcerative syphilids were somewhat cleared of secondary infection by dressings of cysteine, without, of course, any effect on the underlying constitutional disturbance.

Cysteine was used without appreciable effect, in a few cases of miscellaneous cutaneous lesions, psoriasis, pustular psoriasis, lichen simplex chronicus and lichen planus.

COMMENT

Two decided changes were brought about in ulcers following the use of cysteine: first, stimulation of granulation tissue and epithelial proliferation, and second, diminution of drainage, with clearing of secondary infection. In the entire group of 200 cases of ulcer treated with cysteine, there was decided stimulation to healing in 50 per cent, in 25 per cent, the beneficial effect was promising, in the remainder, the results were desultory. In only three or four instances was it necessary to discontinue the treatment because of the discomfort and irritation provoked at the periphery of the ulcers under treatment. Best results were obtained when cysteine was used in alternation with periods of dry, bland treatment, each of two or three days' duration. It was observed that the stimulating properties



Fig. 3 (case 1)—Appearance of ulcer after twenty-one days, complete epithelization

of cysteine were less pronounced when healing was near completion. Many of the lesions progressed rapidly until about from 80 to 90 per cent of the area was covered with epithelium at which point stimulation by cysteine ceased.

The inhibition of bacterial growth by cysteine is difficult to explain. Hammett and Reimann found in wounds treated by thioglucose that there was decided bacterial overgrowth. In fact Welsh² in unpublished

² Welsh, A. L. Personal communication to the authors.

experiments on cysteine *in vitro*, found that in concentration of sulphur of 1/20,000 there was a decided stimulus to growth of certain organisms, the cocci in particular. The cleanness of wounds under treatment by cysteine may possibly be attributed to the wet dressings or perhaps to the elaboration of unknown products by cells of the epithelium or of the granulation tissue in the process of rapid healing.

The use of this compound, in conjunction with multiple pinch grafts in extensive ulceration, gave satisfactory results. There was a larger number of successful "takes" in areas where cysteine was used than in areas treated for purposes of control by routine methods. In certain instances where grafting had been unsuccessful on previous attempts, there was a better average of "takes" following the use of cysteine. It was essential, of course, preliminary to the laying of grafts by various methods that the bed of granulation tissue should be vascular and slightly exuberant, to which end the use of cysteine was particularly applicable.

From the practical standpoint, in the treatment of ulcers in general the use of cysteine is advocated, not as a substitute for the well established procedures in common use, but as an adjunct to the treatment of more resistant cases.

Cysteine is active only in its reduced, sulphhydryl form (SH-). After oxidation to the disulphide cystine (S-S), the compound is inert. For this reason it is necessary to emphasize the need for freshly prepared material applied at frequent intervals. We were unable to demonstrate in the examination of old dressings whether there was oxidation of the compound beyond the disulphide stage. Quantitative studies as to the amount of cysteine absorbed in various stages of healing are as yet incomplete.

SUMMARY AND CONCLUSIONS

The observation of Hammett and Reimann of the stimulating properties of certain sulphhydryl-containing compounds is confirmed.

Cysteine a naturally occurring sulphhydryl containing amino-acid, obtained by the reduction of the disulphide cystine a product of the hydrolysis of wool or of the hair of man, is capable of stimulating granulation tissue and epithelium. When applied to cutaneous wounds and ulcers bacterial growth is inhibited.

This report brings out the practical value of cysteine as used in the Mayo Clinic in the last three years in more than 200 cases of a variety of types of cutaneous ulcer.

ABSTRACT OF DISCUSSION

DR JOSEPH V. KLAUDER, Philadelphia. The story of sulphur one of the oldest remedies known to man is of particular interest to the dermatologist. As an antiparasitic and employed in the bath, sulphur was one of the earliest drugs used in the treatment of skin diseases and is today one of the most important agents employed by the dermatologist. The dermatologist is much concerned with keratin, which is the chief constituent of epidermal tissue. Keratin is peculiar in that it has a high sulphur content, the sulphur being present almost entirely in the form of the amino-acid cystine. No other protein is so high in cystine as the keratin of human hair. It would appear therefore, that the metabolism of sulphur probably plays an important role in the development and growth of epidermal tissue. Attention is now being directed to a new sulphur preparation, one containing the sulphhydryl group. Hammett, Reimann and their co-workers of the Research Institute of the Lankenau Hospital, Philadelphia conducted studies to determine the chemical difference between the nucleus of a cell in mitosis and the nucleus of a cell in the resting condition.

It was determined that whatever other chemical differences there are, the most essential is a rearrangement of the sulphur in the molecules, so that this element appears in the chemical group sulphhydryl and that this group is a stimulant to cell multiplication and that the partially oxidized derivatives thereof are retardative. Among several sulphhydryl preparations studied by Reimann to stimulate wound healing, parathiocresol was selected. He observed that thioglucose favored bacterial growth and that thiophenol was too irritating. Drs Brunsting and Simonsen have shown that cysteine may advantageously be employed. The advantage of this preparation is that it is less irritating than parathiocresol. Its disadvantages are that it is somewhat more expensive and it is more rapidly oxidized forming cystine, which is inert. However, all sulphhydryl containing preparations probably undergo slow oxidation and must therefore be employed fresh. Caution should be exercised in not applying sulphhydryl-containing preparations to malignant ulcerations and probably not to so called premalignant lesions since they may be stimulated to malignant change. In this category I would include ulcers, part of an x-ray dermatitis. For the same reason, prolonged application of sulphhydryl containing preparations to benign epithelial tumors, such as warts, papillomas and molluscum contagiosum, and chronic ulcers, particularly in a person of the cancer age is theoretically at least contraindicated. Another use of sulphhydryl preparations is to cause thickening of the skin over healed ulcers, burns and wounds. Reimann employed parathiocresol not over 0.25 per cent in an anhydrous wool fat base. He advised its application three times a week until the desired result is obtained. Cysteine is probably too unstable for this purpose.

DR JOHN H. STOKES, Philadelphia. I did not hear the entire paper but I wish to commend the sulphhydryl preparations in the treatment of bed sores. They are capable of transforming the misery to which these patients are subjected into comparative comfort. I have in mind particularly the spinal paralytic bed sores. A patient who had almost sloughed away his entire sacral area was relieved of pain and obtained a marvelous effect from it on the bed sores. The cheaper preparations in spite of their bad odor in the mass, can be so handled by skilful picking and attention as to avoid this objection and the tendency to skin irritation likewise.

DR M. F. ENGMAN, JR., St. Louis. Cysteine in small quantities is used in culture material. I have been attempting to grow a typical form of the bottle bacillus which is very difficult, and after a great deal of trouble we obtained a few cultures in which I thought I had the bottle bacillus. There was never a pure culture but cysteine added to the medium improved the growth slightly in what way I do not know. There is a definite metabolic action involved. Perhaps the primitive types of cells in general will improve when cysteine is in their vicinity and assists in their nourishment.

DR LOUIS A. BRUNSTING, Rochester, Minn. Dr Klauder brought up the point of the possible stimulating effect of these preparations on new growths. In our series of over 200 cases biopsies were made in all suspicious cases and all evidences of neoplasms were excised and in some of these cysteine was used to promote the healing of the cauterized base. I will endorse the remarks of Dr Stokes in regard to the value of these preparations in the treatment of decubitus, aside from the disadvantage of the use of wet dressings in the usually affected sites. The rate of healing was about the same under thiocresol or cysteine, although there was more apt to be irritation of the skin surrounding the ulcers under treatment by thiocresol than by cysteine.

The Basal Ganglia—The basal ganglia comprise the following masses of gray matter: (1) optic thalamus, (2) lenticular nucleus, (3) caudate nucleus, (4) red nucleus. The lenticular nucleus and the caudate nucleus together form the corpus striatum. The first three are grouped around the internal capsule. The red nucleus is situated below the optic thalamus in the upper part of the midbrain. The lenticular nucleus is divided into an outer portion (the putamen) and an inner portion (the globus pallidus).—Steen, R. E. A New View of the Function of the Corpus Striatum, *Irish J. M. Soc.* June 1931, p. 258.

FACIAL DIPLEGIA IN LYMPHATIC
LEUKEMIA

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Bilateral paralysis of the facial nerves is rather uncommon. It is usually associated with infections of the nervous system, such as polyneuritis and gummatous basal meningitis. A leukemic origin of the disorder is extraordinary. In view of the infrequency of leukemia as a cause of facial diplegia, we have thought it worth while to report the clinical and pathologic observations in a patient who presented this picture. We have included in this report the clinical data in two other cases of acute leukemia in which a unilateral facial paralysis occurred.

REPORT OF CASES

CASE 1—Clinical History.—L. M., a housewife, aged 46, was admitted to the Rochester Municipal Hospital, Feb. 3, 1932. She complained of paralysis of both sides of the face, loss of the sense of taste, headache, dizziness and nausea. Her present illness began on Jan. 6, 1932, with an attack of dizziness which was followed by nausea and vomiting. The following day she complained of weakness and dizziness and was confined to bed for one week. During this time, she had a fever which ranged between 101 and 103 F. The paralysis of the right side of the face developed ten days before admission to the hospital and that of the left side two days before entry. Additional symptoms at the onset of the facial paralysis were severe throbbing headache, sore throat and tinnitus in the left ear. The past history was irrelevant.

Physical Examination.—She was well nourished and did not appear acutely ill. The temperature (rectal) was 38 C (100.4 F) and the pulse rate 100. Respirations were 20. The blood pressure was 150 systolic and 90 diastolic. The skin and mucous membranes showed no evidence of anemia. The tonsils were enlarged and covered with a grayish-white exudate. Numerous small purpuric spots could be seen over the surface of the tonsils. The cervical glands were slightly enlarged and tender to palpation. Examination of the heart and lungs yielded negative results. The spleen and liver were not palpable.

Neurologic Examination.—The face was expressionless, owing to a bilateral facial paralysis of the peripheral type (fig. 1). The patient could not wrinkle the forehead, retract the corners of the mouth or completely close the eyes. The inability to move the lips resulted in some impairment of speech. The sense of taste was lost over the anterior two thirds of the tongue but was well preserved over the posterior portion. The facial muscles on both sides failed to react to faradic current. There was some nystagmus on looking to the left. Hearing was slightly impaired on the left side. The cranial nerves were otherwise normal. Ophthalmoscopic examination gave negative results. A neurologic survey of the extremities revealed no abnormalities.

On admission the hemoglobin was 85 per cent (Sahli), the red blood cell count was 5,050,000 and the white blood cell count was 14,750 per cubic millimeter. The differential count showed polymorphonuclear neutrophils 70 per cent, lymphocytes 25 per cent, monocytes 3 per cent, eosinophils 1 per cent and basophils 1 per cent. Platelets appeared in normal abundance. A lumbar puncture yielded a clear colorless spinal fluid under pressure of 190 mm. of water. The spinal fluid contained 5 cells per cubic millimeter and the Pandy test was negative. The Wassermann tests of the blood and spinal fluid were negative. Culture of the throat for Klebs-Loeffler bacilli was negative. The urine was normal.

Clinical Course.—On February 12, or nine days after admission, the patient developed a slight fever. At the same time purpuric spots were noticed over the forearms. The white blood cell count on this date was 52,100 per cubic millimeter. A differential count at this time was polymorphonuclear neutrophils, 19 per cent and small lymphocytes, 73 per cent. The bleeding time was three and a half minutes. On February 16 the cervical glands were considerably larger and a few glands could be felt in the left axilla and right inguinal region. Purpuric spots were widely distributed over the body. The spleen and the liver were not palpably enlarged. The facial paralysis remained unchanged. The hemoglobin and red blood cell count fell to 80 per cent and 4,670,000 respectively. The leukocyte count rose to 144,400 per cubic millimeter. A differential count with supravital neutral red technique showed neutrophils, 10 per cent, myelocytes B, 0.5 per cent, basophils 1 per cent, eosinophils 0.5 per cent, small lymphocytes 81 per cent, intermediate lymphocytes, 4 per cent, monocytes, 1 per cent, degenerated forms, 2 per cent. Examination of two fixed stained smears revealed only 5 platelets. An oxydase differential count on 200 cells showed 7.5 per cent positive and 92.5 per cent negative. Bleeding time was eight and a half minutes. Two days later the patient began to bleed profusely from the nose. The glandular enlargement had increased. Albumin and red blood cells appeared in the urine. The neurologic signs remained unchanged. On February 25, a blood count showed 35 per cent hemoglobin, 2,080,000 red blood cells and 61,600 white blood cells per cubic millimeter. Death occurred on the following day, approximately seven weeks after the onset of the illness. Necropsy was obtained.

Gross Anatomy.—There were numerous purpuric spots in the skin of the trunk and extremities. The mucous membranes and serous surfaces of the thoracic and abdominal cavities also showed small hemorrhages. The right pleural and pericardial cavities each contained about 200 cc. of bloody fluid. There was generalized enlargement of the superficial and deep lymph glands. The spleen and the liver were not enlarged.

The meninges appeared normal except for many petechial hemorrhages in the pia-arachnoid over the convexity of the brain. The cranial nerves showed no macroscopic changes. The seventh and eighth nerves were traced through the petrous portion of the temporal bones, and no gross abnormality was found. On section the brain and spinal cord were normal.

Microscopic Anatomy.—Sections taken from representative areas of both hemispheres and stained with thionin and hematoxylin-eosin showed no structural alteration except for an occasional vessel with a small collection of lymphocytes in the perivascular space. In some areas infiltration with lymphoid cells occurred in both the cerebral meninges and the walls of the meningeal vessels. As a result of the accumulation of these cells in the walls of the vessels, there was weakening with consequent hemorrhage. Sections of the brain stem showed no evidence of infiltration or hemorrhages. The cells forming the nuclei of the seventh nerves showed marked structural alteration of the type which occurs following injury to a peripheral nerve. Many of the cells were smaller and stained poorly. The nucleus and Nissl granules had disappeared from many of the cells, and in others the nucleus was eccentrically placed (fig. 2). The third and seventh pairs of cranial nerves were unfortunately the only ones available for microscopic study. Sections taken from the seventh nerves showed diffuse infiltration with lymphoid elements (fig. 3). The cells were found between individual fibers especially in the peripheral portion. The perineural tissues were also heavily infiltrated with lymphoid cells and red blood cells. The cellular infiltration of the right facial nerve was more extensive than that of the left. Sections of the facial nerves stained by the March method showed degeneration of the nerve fibers. This was likewise more pronounced in the right facial nerve. Leukemic infiltrations were also found in both oculomotor nerves. The spinal cord was normal except for a few minute hemorrhages. March preparations showed no evidence of degeneration of the fiber tracts. The spinal meninges were also infiltrated with lymphocytes. A few of the spinal nerves showed small collections of lymphocytes in the perineural spaces. The walls of some of the meningeal vessels were infiltrated with lymphocytes.

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Comment—The clinical picture on admission suggested strongly follicular tonsillitis complicated by cranial nerve neuritis. The appearance of the tonsils at this time, however, was atypical, since numerous small purpuric areas were present. This should always suggest the possibility of a leukemic process. The fact that the blood picture at this time revealed nothing other



Fig 1 (case 1)—Bilateral facial palsy showing the expressionless face

than a neutrophilic leukocytosis made the diagnosis more difficult. Later when the blood took on the characteristics of lymphatic leukemia the diagnosis was readily established. It is of distinct interest that infiltration of the cranial nerves occurred at a period when there was no increase in the number of lymphocytes in the peripheral blood. This demonstrates that it is possible to have marked increases in the number of cells in local-

ized areas of the body without having their numbers augmented in the peripheral blood.

CASE 2—Clinical History—J. B., a 65 year old, married farmer was first seen in the medical outpatient department, Dec 8, 1932. He complained of pain in the right arm, double vision, dizziness and night sweats. The onset was in September, 1932, and was characterized by severe shooting pains in the left shoulder which radiated down the arm. These pains persisted for several weeks and were followed by pain of a similar type in the right arm. About two and a half months after the onset, he complained of double vision and a "staggering spell" during which he noticed a tendency to fall toward the right. The following day his wife noticed an internal strabismus in his left eye. There was no history of tinnitus or headache. Since the onset of his illness he has had frequent night sweats, weakness and loss of weight. The past history was irrelevant.

Examination—The patient was well nourished and did not appear acutely ill. The temperature, pulse and respirations were normal. The general physical examination showed evidence of cardiac enlargement. The blood pressure was 160 systolic and 85 diastolic. There was no enlargement of the superficial lymph glands, liver or spleen. A large ecchymotic area was present in the skin of the right flank. The neurologic examination gave negative results except for paralysis of the left abducens nerve, which was unaccompanied by paralysis of conjugate deviation of the eyes. The blood count was as follows: hemoglobin 82 per cent (Sahli), red blood cells, 4,350,000 per cubic millimeter, leukocytes 15,300 per cubic millimeter, differential count 37 per cent polymorphonuclear neutrophils, 2 per cent eosinophils, 57 per cent lymphocytes and 4 per cent monocytes. The smear showed definite diminution in the number of platelets. The urine contained a small amount of albumin. The Wassermann test of the blood was negative.

Course—On December 13 he was again examined in the outpatient department. He complained of the same symptoms which were recorded at the time of his initial visit. During the intervening five days he developed some difficulty in eating. Examination on this date revealed a complete right facial paralysis of the peripheral type, left abducens paralysis and slight evidence of weakness of the right abducens nerve (fig 4). He was admitted to the hospital for further study with a tentative diagnosis of lymphatic leukemia.

On admission, December 15, his physical status was unchanged, except for slight enlargement of the cervical and axillary gland. A few petechiae were observed on the soft palate. The white blood cell count rose from 20,000 on the day of admission to 48,000 on the day of discharge, nine days later. Supravital and fixed preparations (including oxydase stain) showed 92 per cent lymphocytes of the small and intermediate types. The spinal fluid contained 23 lymphocytes per cubic millimeter. The Wassermann test of the spinal fluid was negative. The blood sugar was 71 mg per hundred cubic centimeters, the nonprotein nitrogen, 50 mg, and the blood uric acid, 6.6 mg. The basal metabolic rate was plus 74.

The diagnosis of lymphatic leukemia was established on the basis of the clinical and laboratory data. The patient received three high voltage roentgen treatments across the base of the skull and one over the spleen. On December 21 slight ptosis and limitation of inward movement of the left eye were present. The paralysis of the left sixth nerve and weakness of the right sixth nerve remained unchanged. The right facial paralysis showed no evidence of clearing. The patient was discharged from the hospital December 24, unimproved, and died at home ten days later. A communication from his wife stated that he did not develop paralysis of the left side of the face before death.

Comment—The onset of the disease in this case was likewise characterized by a predominance of symptoms and signs referable to the nervous system. The cranial nerve palsies developed when the leukocyte count was relatively low and few symptoms of a constitutional disease were present. Studies of the blood in this case were helpful in arriving at an early diagnosis. It is impossible from the clinical observations in this patient to determine whether the cranial nerve palsies were the result of nuclear or peripheral nerve involvement. The absence of weakness or paralysis of conjugate deviation of the eyes suggests a peripheral location of the lesion.

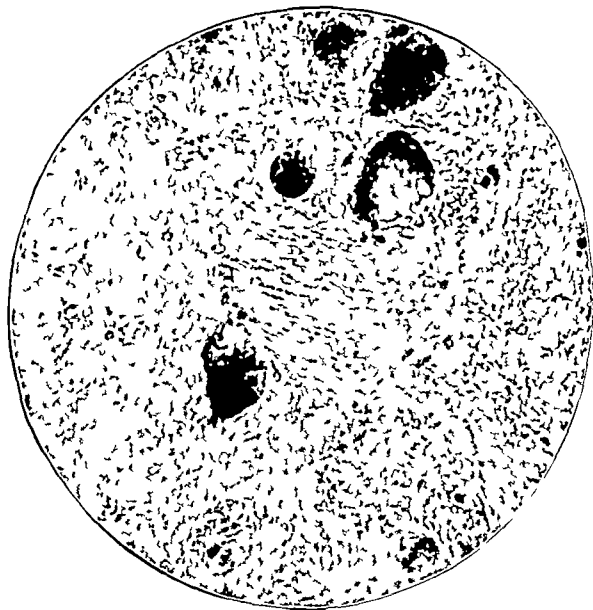


Fig 2 (case 1)—Structural alteration of the cells of the left facial nucleus

CASE 3—Clinical History—J. V., a 21 year old truck driver was admitted to the Rochester Municipal Hospital in a critical condition. He complained of bleeding and weakness. His present illness began ten weeks prior to admission with a severe nosebleed. The following day there was a large bluish purple discoloration over the right side of the face with marked edema and partial closure of the right eyelids. He was admitted to another hospital in the city on May 31, where he remained

six weeks. A diagnosis of lymphatic leukemia was made, and he received two blood transfusions and high voltage roentgen treatments over the neck and spleen. On his admission to that institution examination of the blood showed a marked secondary anemia, and the leukocytes numbered 109,000 per cubic millimeter. On July 5 he developed a paralysis of the right side of the face. The past history was irrelevant.



Fig 3 (case 1)—Infiltration of the right facial nerve with lymphoid cells

Physical Examination—He was pale and emaciated. The temperature was 40 C (104 F) and the pulse rate 120 respirations were 30. He was mentally clear. The mucous membranes of the mouth showed many small hemorrhages and there was marked inflammation of the gums. The cervical, axillary and inguinal glands were enlarged. The spleen was palpable. Examination of the heart and lungs gave negative results. The blood pressure was 110 systolic and 0 diastolic. The neurologic examination gave negative results except for a right facial paralysis of the peripheral type.

The blood count on admission showed a pronounced secondary anemia with 1,440,000 white blood cells per cubic millimeter. The predominant cells in the smear were lymphoblasts and lymphocytes. Platelets were decreased in number. Urinalysis and the Wassermann test of the blood gave negative results.

Course—The patient's condition became progressively worse and the white blood cell count fell to 4,500 per cubic millimeter on the day of his death, six days after admission. Autopsy was not obtained.

Comment—This case differs somewhat from the two previously described in that the facial paralysis appeared six weeks after the clinical picture of leukemia was well established. Hemorrhagic phenomena in the skin and mucous membranes were prominent symptoms before the paralysis occurred. The nature of the lesion involving the seventh nerve was undetermined but nevertheless it seems justifiable to attribute it to the changes found in the cranial nerves in cases of leukemia.

COMMENT

In 1926 Fried¹ reported the pathologic changes in the brain in a case of lymphatic leukemia and reviewed from the literature the neuropathologic observations in thirty cases. In seven of these cases there was

involvement of the cranial nerves, and in four a bilateral facial paralysis occurred. In addition to those cases quoted by Fried similar cases have been reported by Moore,² Laroche and Chatelin,³ Trommer and Wohlwill,⁴ Spangenberg⁵ and Howell and Gough.⁶ In the majority of these cases, in which pathologic examination was done, the leukemic changes were found in the nerves or their sheaths. The paralysis and ultimate degeneration of the nerves were ascribed to infiltration with lymphoid cells and hemorrhages. Howell and Gough have furnished an excellent example of cranial nerve paralysis due to nuclear involvement. Although they found slight leukemic infiltration of the nerve sheaths the chief pathologic changes were found in the nuclear regions and consisted of lymphomas, capillary thrombosis and perivascular accumulation of lymphocytes.

It is interesting to note that the cases in which facial diplegia occurred were all of the lymphatic type and, with one exception, were cases of acute leukemia. Cranial nerve palsies are much less frequent in the course of myelogenous leukemia. Trommer and Wohlwill reported the case of a 46 year old laborer with severe trigeminal neuralgia, which was not relieved by the extraction of teeth. It was later discovered that he had myelogenous leukemia.

The frequency of involvement of the facial nerves is not surprising when one considers the anatomic circumstances which make the facial nerves particularly vulnerable. Slight edema of the facial nerve in its intracanalicular portion may result in considerable functional disturbance. In our first case the infiltration of the oculomotor

nerves was almost as extensive as that found in the facial nerves, yet there was no evidence of dysfunction during life. Although the facial nerve is given special mention in individual case reports, it must be recognized that other cranial nerves may show the same histologic changes. It is a well established clinical fact that leukemia is a relatively common cause of that group of symptoms which is designated as

Memere's symptom complex. This syndrome is usually ascribed to hemorrhages in the labyrinth but may be due to infiltration of the eighth nerves with lymphoid



Fig 4 (case 2)—Right sided facial paralysis on an attempt to close the eyes and retract the corners of the mouth

- 2 Moore F C. *Lancet* 1: 525, 1902.
- 3 Laroche and Chatelin. *Diplegia faciale peripherique au cours d'une leucemie lymphoide*. *Rev. neurol.* 19: 642, 1911.
- 4 Trommer and Wohlwill. *Periphere Nervenkrankung bei Leukemie*. *Zentralbl. f. inn. Med.* 25: 996, 1922.
- 5 Spangenberg J J. *Leucemia linfogena aguda iniciacion visceral por frecuente pre euntis adem s una diplegia facial y la paralysis del nervio ocular externo izquierdo*. *Presna med. argent.* 1: 329, 1928.
- 6 Howell A and Gough J. *Acute lymphatic leukemia with Facial Diplegia and Double Abducens Palsy*. *Lancet* 1: 724, 1932.

elements similar to that in the case described by Trommer and Wohlwill

While the number of clinical and pathologic observations on cranial nerve involvement in leukemia is small, we believe that if the cranial nerves were examined pathologically in all cases of leukemia the incidence of involvement would be much higher than is generally supposed. It is important, therefore, to consider the possibility of leukemia in all cases of unexplained cranial nerve paralysis, particularly in those cases in which there is clinical evidence of unilateral or bilateral paralysis of the seventh or eighth nerves.

If one bears in mind the possibility of leukemia as a cause of cranial nerve paralysis, it will be only the exceptional case that may offer difficulty in diagnosis. A facial diplegia of leukemic origin with perhaps some paresthesia in the extremities, owing to infiltration of the spinal nerve roots, may be confused with that form of infectious polyneuritis in which a bilateral facial paralysis is a special feature. The presence of glandular enlargement, hemorrhagic phenomena in the skin and mucous membranes and leukemic blood changes should lead to the correct diagnosis. The same criteria are necessary in differentiating the condition from facial diplegia due to syphilis. In Howell and Gough's case the patient had a positive Wassermann test but necropsy disclosed the leukemic nature of the paralysis.

SUMMARY

Patients suffering from leukemia, especially the acute type, may have paralysis of the cranial nerves owing to leukemic infiltrations and hemorrhages in the nerves or their nuclei. The facial nerves are frequently affected. In three cases of acute lymphatic leukemia reported, bilateral facial paralysis occurred in case 1 and unilateral facial paralysis in cases 2 and 3.

ABSTRACT OF DISCUSSION

DR. GEORGE B. HASSIN, Chicago: Drs. Garvey and Lawrence gave an excellent description of the peripheral nerve changes. They show infiltrative phenomena of perineuritis and endoneuritis combined with degenerative nerve changes ordinarily seen in peripheral neuritis. The infiltrations and the changes in the axons and myelin have no relationship; that is, the degenerative nerve changes are not caused by the infiltrations. The two are independent phenomena due to the same cause, an infection or, more probably, an intoxication. The ganglion cell changes of the seventh nerve demonstrated by the authors are secondary (axonal reaction).

DR. R. H. JAFFE, Chicago: In the modern literature on leukemia there is the tendency to consider it as belonging to the malignant tumors. I do not think, however, that this assumption is warranted since fundamental differences exist between leukemia and malignant tumors. While in malignant tumors metastases develop from the primary tumor by the implantation of cells derived from the primary tumor, the leukemic infiltrations develop locally from the undifferentiated mesenchyma, which is widely distributed in the body and is found especially about the smaller blood vessels. Normally when irritated this undifferentiated mesenchyma gives rise to free histiocytes and probably also to lymphocytes and plasma cells. In leukemia there is a fundamental change in the reactivity of the mesenchyma in that even a slight physiologic stimulation induces an abundant proliferation of the perivascular cells, which may differentiate into lymphoid or myeloid tissue. Thus the leukemic tissue develops locally and not by implantation from a primary focus. The organs most commonly affected by the leukemic cell proliferation are the bone marrow, spleen, lymph nodes, liver, lymphatic tissue of the digestive tract, and the kidneys. In some instances the proliferations are more generalized, involving also the heart, suprarenals, thyroid

lungs, skin and other structures. It is interesting to see how the mesenchyma of the nervous system reacts in cases of leukemia and it seems to me that it does not differ from the mesenchyma of the other regions of the body. The presence of toxic changes in the brain in cases of acute leukemia supports my conception that there exist intimate relations between infection and leukemia. There is, perhaps, an inherited or acquired abnormal irritability of the mesenchyma, the leukemic tendency of which becomes manifest under the influence of a variety of toxic or infectious causes.

DR. TOM B. THROCKMORTON, Des Moines, Iowa: I should like to know how long there may be evidence of peripheral cranial nerve involvement before leukemic changes in the blood become manifest, or do the blood changes always precede the paralytic symptoms? I have in mind an instance of an isolated third nerve paralysis occurring in a middle aged man who otherwise seems to be perfectly healthy. No explanation so far, has satisfactorily accounted for the cause of the paralysis. The presentation of this paper opens up a new possibility and I wonder whether it may be possible that my patient is manifesting the early evidence of leukemic paralysis before blood changes of the disease are evident, just as one often sees patients with a combined cord lesion due to pernicious anemia, in whom the blood changes are slight or entirely absent.

DR. JOHN L. GARVEY, Milwaukee: In answer to the last question the first patient had a white count of 14,000 and there was no disturbance of the differential formula. One of the other cases I recall a case of double abducens and double facial paralysis described by Spangenberg presented a white count of 9,000. The differential count in this case revealed a lymphocytosis.

UNUSUAL EXPERIENCE WITH AMEBIC DYSENTERY

IN AN AVERAGE HOSPITAL OF A NORTHERN STATE,
WITH REPORT OF NINE CASES ORIGINATING IN CHICAGO

KANO IKEDA, M.D.

ST. PAUL

The news of a serious outbreak of amebic dysentery in Chicago during the summer contained in the press dispatch of Nov. 10, 1933, immediately confirmed the belief that all the five cases then presenting the disease which had been recognized in this hospital during the preceding three weeks, had probably been contracted while the patients were visiting in that city. Not until the publication of the articles¹ on amebiasis dealing specifically with this outbreak, in the November 18 issue of THE JOURNAL, was the seriousness of the situation with its widespread danger affecting the whole nation fully appreciated. While my associates and I did not, from the onset of our experience, minimize the far reaching epidemiologic significance of amebiasis as a result of the suspected outbreak in Chicago, we were more impressed with the comparatively large number of cases we had been able to recognize during this short period, when apparently no other cases of amebic dysentery had been reported from this locality.

Indeed, so much interest had already been aroused that on November 7 we devoted the entire evening to the subject of amebiasis with autopsy report at our monthly staff meeting. It became clearly pertinent to

Read in part before the Ramsey County Medical Society Nov. 29, 1933.

From the pathologic laboratory of the Charles T. Miller Hospital Inc. and Amheist H. Wilder Dispensary, St. Paul, and the Department of Pathology, University of Minnesota Medical School, Minneapolis.
1 Bundesen, H. N., Rawlings, I. D., and Fishbein, W. I.: The Health Hazard of Amebic Dysentery, J. A. M. A. 101: 1636 (Nov. 18), 1933.
Tonney, F. O., Hoeft, G. L., and Spector, Bertha Kaplan: The Threat of Amebiasis in the Food Handler, ibid. 101: 1638 (Nov. 18), 1933.

question whether some of the cases showing intestinal disorders, at least among those who had visited in Chicago during the summer, may not in reality have been cases of amebic dysentery which physicians failed to suspect or recognize. That such would seem to have been the fact has since been amply substantiated by reports from various parts of the country, notably the report by Lund and Ingham² in a recent issue of *THE JOURNAL*.

The Chicago epidemic, resulting in a nation-wide fresh dissemination of this infection, has awakened unusual interest among practicing physicians. The present report of nine cases that came under observation in the past six weeks with some of the features unique in my experience, is deemed timely.

INCIDENCE IN MINNESOTA

While a number of articles have been written calling the attention of the profession to the relative frequency of this infection in the Northern states, only sixty-seven cases were reported to the Minnesota State Board of Health in the sixteen-year period ended Dec 31, 1932, from civil practice, with thirty-two deaths, an incidence of four cases a year with a 50 per cent mortality, 476 other cases were recorded during the same period from the United States veterans' hospitals and 120 cases at the Mayo Clinic, among the out of state patients from 1926 to 1932, inclusive. Only seven cases were reported from St. Paul from 1917 to 1927, all of which were fatal. No cases were reported from this city from 1928 to 1932 inclusive. Only ten cases were reported from Minneapolis from 1917 to 1932, inclusive. This would seem to indicate that physicians either fail to recognize this condition in many instances or neglect to report the occurrence to the health authorities when diagnosed. That the endemic occurrence of this infection has been rare in Minnesota may be partly inferred from my own limited experience of the past fifteen years, representing however, a fair cross section of hospital laboratory practice in the Twin Cities, in which only two or three cases (or less than 1 per cent of the stools examined for ova and parasites) of intestinal amebiasis, usually of the chronic or recurrent type, have been seen annually. This may be said to conform roughly to the experience of the Chicago Board of Health, with only eighteen cases of amebiasis a year since 1930.

It was therefore quite unusual to discover rather unexpectedly two cases of amebic dysentery within a period of a few days. As the source of infection in the first case had already been fairly definitely traced to Chicago our suspicion in the second case was soon confirmed when the patient was found to have been a frequent visitor to Chicago during the summer. Chicago as a common source of amebic infection was now more than a probability and it was freely predicted that more cases of dysentery would be found among those who had visited the world's fair. Our prediction was soon substantiated by finding three additional cases all traceable to that city within another ten days, making a total of five cases of amebic dysentery in less than twenty days, a unique experience in ordinary times in a private hospital of an average capacity in this part of the country. We have since diagnosed four more cases making a total of nine cases in a period of approximately six weeks.

In the face of a serious outbreak such as has occurred during the past four months, it may be estimated that out of those who actually become exposed to this infection, that is, out of those who ingested cysts of *Endamoeba histolytica*, a small number may entirely escape transmission, another equally small number may develop the symptoms of acute dysentery requiring immediate medical attention and the remainder, representing fully more than 50 per cent, though infected may probably show little or no clinical symptoms of dysentery or serious abdominal distress. It is this last group, constituting many thousands of Chicago visitors from all over the country during the summer months, that may become a great menace to public health, along with the clinical cases that are never diagnosed.

REPORT OF CASES

An analysis of these nine cases brings out several unique and atypical features, which may easily be confused with other intestinal disorders and may prove



Fig 1—Appearance of colon in case 1 showing narrowing of the lumen, irregular outline (filling defect), induration of the wall involving the cecum and part of the ascending colon. There is apparent shortening or contraction of the involved area, also a wide open ileocecal valve.

not only interesting but instructive in the differential diagnosis of this unfamiliar disease. The possibility of intestinal amebiasis among those who may consult the physician with vague abdominal distress or gastrointestinal upsets as well as with acute abdominal symptoms is once more emphasized, in the light of our experience with these nine cases. None of the patients, it should be noted, had ever experienced similar attacks before.

CASE 1 (Drs H. E. Hullsiek and C. N. Hensel).—C. B., a man aged 59, a surgeon on his way home from an extended vacation trip through the Pacific West was forced to stop off at St. Paul on account of rectal discomfort. He was admitted to the hospital October 13 as an outpatient for proctoscopic examination and biopsy from a rectal lesion which had been observed at the office of the attending physician. The patient gave a six weeks history of rectal discomfort associated with periods of diarrhea. The first attack of diarrhea was experienced a day after his arrival at Yellowstone National Park from

1. I. C. C. and Ingham, T. R. For Fatal Cases of U. S. 10. J. Am. Med. Assoc. 101: 1000 (Nov. 2, 1933).

Chicago, September 1, and was thought to be due to water and foods at the park. This lasted three days. The stools were clay colored and there was a trace of gross blood and mucus. This he attributed to straining at stool. September 8, he took a laxative, which made him feel much better. The stools appeared normal. There was a recurrence of diarrhea, September 11. This was associated with vague pains in the rectal

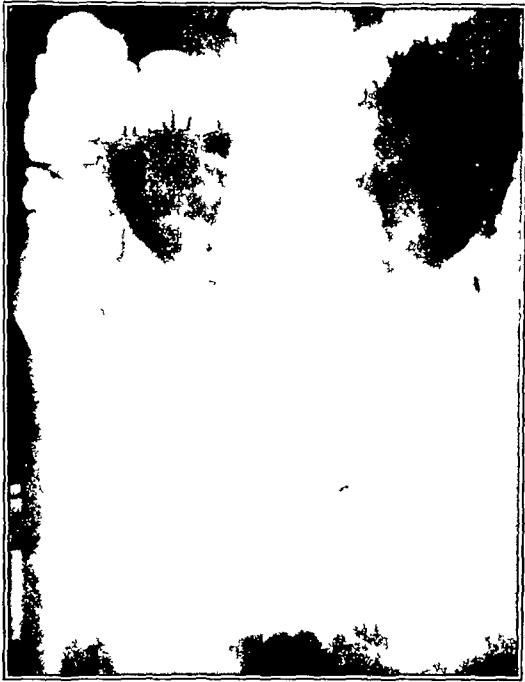


Fig. 2—Appearance of colon in case 5, showing a similar appearance of the cecum, ascending portion and the terminal ileum, also small areas of filling defect in the transverse colon and sigmoid.

region and some shooting pains in the anal area, as of hemorrhoids. September 30, a rectal tube was passed for a high enema. This apparently traumatized the rectum. From this time on, the symptoms had become intensified. The stools were loose and contained blood and mucus. Although he experienced abdominal and rectal discomfort, had some fever from time to time and did not feel well at times, he continued on his scheduled trip, visiting California and the Pacific Northwest. He was on his way home to Philadelphia when he sought medical advice in St. Paul.

On admission, physical examination was essentially negative except for tenderness in the left lower quadrant to deep palpation. There was also a palpable mass—probably a distended cecum—in the right lower quadrant.

Proctoscopic examination revealed a small ulcer with a soft elevated edge in the rectosigmoid junction, which was apparently due to the trauma caused by the self-introduced rectal tube, two weeks before. Biopsy from the ulcer revealed an acute inflammatory lesion. Because of the vague palpable mass in the right lower quadrant, a roentgen examination of the colon was done. There was a diffuse irregular filling defect with induration of the wall, as though by an infiltrating growth, with a narrowing of the lumen and an apparent shortening or shrinking involving the cecum and ascending colon, without evident spasticity, fluoroscopically. This was interpreted to be a diffuse, chronic, nontuberculous inflammatory lesion or possibly an infiltrating tumor (fig. 1).

The patient was discharged on the same day. He was requested to bring in a specimen of feces, in view of the roentgen examination of the colon. This he did on the following day. The stool was soft, partly liquid and contained much mucus and some gross blood. Microscopically, sluggishly motile amebae in large numbers and a few cysts characteristic of *Endamoeba histolytica* were found. The following morning a sample of fresh stool was obtained which revealed many actively motile endamebas morphologically characteristic of the

histolytica type. Bacteriologic examination of the feces was negative for the organisms of the typhoid and dysentery groups. The Widal and other agglutination reactions were negative.

The patient was hospitalized, October 18. His temperature rose to 100 F on the second day. Urinalysis was negative. The blood showed hemoglobin, 71, erythrocytes, 4,110,000, leukocytes, 6,200 with 69 per cent neutrophils. A course of emetine injections was given and the patient was discharged, October 30, considerably improved. The boggy mass in the right lower quadrant gradually disappeared. The stools showed a few cysts from time to time but otherwise became normal in consistency and appearance.

While the patient himself was, at first, strongly of the opinion that the condition was due to water and foods at Yellowstone National Park, the fact that he spent eight days in Chicago before he proceeded toward the west pointed strongly to that city as a probable source of infection. While in Chicago, he stopped at Hotel C but ate most of his meals at Restaurant H on M Avenue. He ate one breakfast and a dinner at the hotel and a sandwich at the fair. The incubation period in this case is estimated to be from seven to fifteen days.

This case is of particular interest because of the rectal ulcer, which prompted a biopsy, and of the peculiar infiltrating type of a lesion in the cecum and ascending colon, which doubtless was due to the amebic infection. We were not prepared to make a diagnosis of amebic colitis from the roentgenograms, although in the light of our subsequent experience we believe that the roentgen finding of this disease is fairly typical and may be of aid in diagnosis.

CASE 2 (Dr. A. R. Hall)—T. A. P., a man, aged 52, an insurance executive, was admitted to the hospital, October 19, complaining of diarrhea, tenderness and gas in the intestine, with a temperature of 101. The onset came with sore throat, soreness and stiffness of the neck, general malaise and weakness about a week before admission. The patient believed that he had not been feeling well since about the middle of July, when, while in his summer cottage, he had a first attack of



Fig. 3—Low power view of the lesion in the rectum obtained by biopsy showing a deep mucosal creta with submucosal space filled with mucous exudate containing only a few scattered inflammatory cells.

diarrhea and "stomach symptoms" in light form. During a visit to Chicago, September 16-18, he suffered a terrific abdominal cramp with diarrhea which lasted two or three days. On admission there was a diffuse abdominal tenderness. The liver was enlarged and palpable. He was nauseated and vomited several times. He appeared acutely ill. The leukocyte count was 22,000 and the temperature rose to 103. The first stool

was semihquid and contained mucus, some gross blood and pus. There were many motile amebas morphologically characteristic of *Endamoeba histolytica*.

The patient had a stormy course for a few days with the temperature remaining up around 103°. Roentgenologically, the liver was definitely enlarged but the diaphragm was not fixed. The temperature came down to the normal on the fifth day.

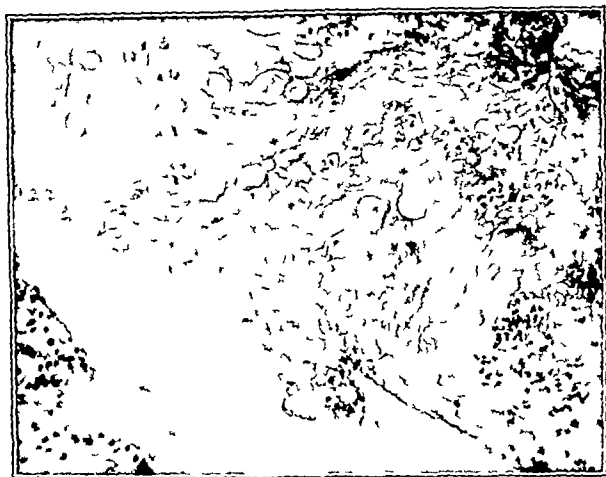


Fig. 4—High power view taken from the same section as figure 3 of an area in the mucous mass in the submucosa showing nests of amebic bodies and few inflammatory cells. Note apparent division of ameba.

after the institution of the emetine therapy. The stools became normal in consistency and appearance within a few days. The amebas disappeared on the third day. The liver decreased in size gradually to normal, with improvement. The patient was discharged after two weeks of hospitalization.

The patient had been a frequent visitor in Chicago since March, 1933. In all he visited eight times between March 23 and October 18, staying at various hotels, including Hotels P, E, M and C. He stopped at Hotel C, September 16-18, with his family. His meals were eaten at these hotels usually but also at the fair and at several restaurants, including Restaurant H. The patient traced his present trouble definitely back to his first attack in July, which was mild compared with the attack in September while a guest at Hotel C. The probable source of infection in this case is difficult to determine, since he had the first attack presumably in July. Whether the earlier attacks may have been due to dietary indiscretion is a justifiable conjecture, since the patient had a gastro-enterostomy for a duodenal ulcer in 1925, followed by a gastric resection because of a gastrojejunal ulcer the following year. If this proves correct, the source may be traced to Hotel C, in which event the incubation period for this case may be estimated to be between twenty-four and twenty-six days.

The case is of interest when considered in connection with case 6, the patient being one of his daughters. The case is of further interest since the clinical symptoms were so intense in the beginning as to arouse in the mind of the clinician a doubt as to whether this was a simple uncomplicated case of acute amebic dysentery. The cultural studies of the stools were negative.

CASE 3 (Dr. E. T. Herrmann)—P. B., a man aged 45, an attorney, was admitted to the hospital November 2 complaining of general pain and discomfort in the abdomen with explosive movements and diarrhea, mucus and blood in the stools. There was a rise in temperature. The abdomen was distended and tender over the lower portion. The liver and spleen were

not palpable. The present complaints began a day before admission. The first sample of feces contained much mucus and gross blood and showed many actively motile amebas, morphologically considered *Endamoeba histolytica*. On admission, the temperature was 102°, the leukocyte count 22,500. The temperature was normal on the fourth day and the leukocyte count 9,400 a week after admission.

Under the specific therapy, he has been progressing satisfactorily. No amebas or cysts have been found since his stools returned to normal on the fourth day.

The patient was in Chicago September 14-16, remaining at Club C. He returned there on the following week, September 21-22, and stayed at Hotel S. He took most of his meals at the club and the hotel but ate once at Restaurant H and once on the fair grounds. He remembered eating a sandwich with a glass of beer at Hotel C. The incubation period is estimated to be between fifteen and seventeen days.

CASE 4 (Dr. E. T. F. Richards)—M. O., a woman aged 41, a housewife, was admitted to the hospital, November 7, complaining of severe abdominal cramps and marked diarrhea. The present illness began about October 20, when she had cramps in the abdomen and bearing down and pulling pains with much gas in the intestine and frequent movements but no diarrhea at first. There was a general discomfort and malaise and a rise in temperature. About a week after the onset she developed a marked diarrhea which continued and became very severe. She lost her desire or taste for food. The stools were liquid, expelled explosively and contained blood and mucus grossly. *Endamoeba histolytica* was found in large numbers. There were seven and nine stools in the first two days following her admission. The patient was acutely ill and appeared very toxic. The temperature was from 100.6 to 102.4, with a pulse rate of from 120 to 144 per minute during



Fig. 5—Appearance of colon in case 7 portraying more advanced changes in the cecum, ascending colon and involvement of the transverse portion. The ileocecal valve is widely patent.

the first few days. The leukocyte count on admission was 19,450 with 88 per cent polymorphonuclears. The temperature came down to normal on the eighth day after the institution of the specific therapy. Her improvement was slow at first but she is now well on the way to recovery. The stools have been normal since the fifth day and no amebas or cysts have been found since the third day.

The patient visited Chicago, September 24, and remained until the 27th. She stopped at Hotel C and ate her meals there mostly. She visited the city two months before. No data are obtainable regarding this visit. The incubation period is calculated to be between twenty-three and twenty-six days.

It was noted that her stools, unlike those from other patients, were watery, mixed with streaks of thin mucus and dark brownish red. The mucus was not thick, glairy and semitransparent as in the typical case. Microscopically there were many pus cells and macrophages as well as fresh red blood cells. While no dysentery bacilli were isolated and the Widal test was negative, it is assumed that there was a mixed bacterial infection to cause this type of stools, which might also account for her extreme toxic state.

CASE 5 (Dr. H. E. Hullsiek).—H. J. C., a man, aged 51, an industrial director, was first admitted to the hospital October 13, for the purpose of proctoscopic examination and biopsy.



Fig. 6.—Sigmoid from a case of systemic amebiasis showing a small infected diverticulum—the only primary lesion in the colon.

He first noticed abdominal cramps, gas, tenderness and diarrhea, August, 15. He complained of a poor appetite and had a general feeling of malaise. Though not acutely ill, he was feeling "rotten" and suffered from a vague abdominal distress most of the time with occasional recurrence of cramps and diarrhea. He had much tenesmus and a frequent desire to evacuate, without results. He consulted a physician, September 10, and underwent a general physical examination and a roentgen examination of the colon. These examinations were essentially negative except for a fissure of the anus, for which he was given suppositories. A month later, October 10, he consulted the present physician, who on proctoscopic examination found an area of peculiar diffuse induration involving the wall of the rectum, quite suggestive of a malignant growth, and a marked fibrous stricture of the anus. On admission two small pieces were removed through the proctoscope for rapid diagnosis. A frozen section of the specimen merely showed a chronic inflammation of the rectal mucosa. The surgeon was not satisfied with the diagnosis and arranged for a second biopsy later and discharged the patient. He returned

to his work, but the abdominal cramps were so severe that morphine was often required to relieve the pain. For several days following the biopsy, he had watery diarrhea as many as fourteen times in one day. (The history was obtained later.)

The patient was readmitted eighteen days later, October 31, for a second proctoscopic examination and biopsy. This again proved negative for a malignant growth. Eight days later, and only a few hours before he was to be discharged, a stool specimen was submitted for examination. It was soft, partly formed and partly liquid and contained much free mucus and gross blood. *Endamoeba histolytica* was at once demonstrated in large numbers and actively motile. His discharge was canceled and he was immediately put on the specific therapy.

The patient had no elevation of temperature and there was no increase in leukocytes, and apparently he was not acutely ill while in the hospital. He steadily improved and was discharged, November 16, after a course of treatment. The stools became mushy and bulky but were never free of cysts and occasionally showed sluggishly motile amebas in small numbers up to the day of discharge. A roentgen study of the colon at this time revealed changes in the cecum and ascending colon not unlike those found in other cases. The transverse colon and the rectosigmoid area also showed small, irregular filling defects due probably to superficial ulceration as well as to local spasm (fig. 2).

The patient visited most of the larger cities of the East and Middle West during the past year. He was in Chicago three times, from June 19 to June 23, September 15 and 16 and October 3 and 4. Since his abdominal symptoms began in the middle of August, the infection probably occurred during his first visit, which makes the incubation period from fifty-three to fifty-seven days. He stayed at Hotel A during all these visits, except one night at Hotel E. He ate his meals at the hotel as a rule but also ate at various restaurants, including Hotel C, Club I and Restaurant T, but never at the fair.

Serial sections of the second biopsy tissue from the rectal mucosa revealed an early typical amebic lesion, filled with a nonpurulent mucous exudate containing nests of amebic bodies. This was recognized following a discovery of *Endamoeba histolytica* in the stools (figs. 3 and 4).

CASE 6 (Dr. W. R. Shannon).—R. P., a girl, aged 10 years, student, a daughter of patient 2, was admitted to the hospital, November 13, following a telephone conversation between her mother and the school nurse, who reported that the child was crying, with severe abdominal cramps. The mother at the time was with her husband, patient 2, who came up to the laboratory for examination of the stool. The mother was advised of the possibility of her daughter's condition being due to amebic dysentery and requested to submit the stools for examination. The parents brought the child to the hospital directly from the school and the stool was examined at once. The stool was copious in amount, soft, mushy and partly liquid. It contained much mucus but no gross blood. Microscopically there were many vegetative and precystic forms and a few cysts typical of *Endamoeba histolytica*. The child showed a distended abdomen with much gas and complained of pain and distress diffusely over the lower portion, causing her to double up. The temperature was normal. The leukocyte count was 15,400, with 87 per cent polymorphonuclears.

The child had a terrific reaction to a first dose of one eighth grain (0.008 Gm.) of emetine hydrochloride subcutaneously, but has since tolerated a regular course of injections and is now on her way to recovery. The stools became soft and mushy and at times formed and no longer show either the vegetative or the encysted form of *Endamoeba histolytica*.

The child with the rest of the family visited the fair at Chicago, stopping at Hotel C from September 16 to September 18. Most of the meals were taken at the

fair, but all the breakfasts and one or two other meals were eaten at the hotel

The question as to when and how this child became infected is of interest. If her father, patient 2, had already been infected when the family registered at Hotel C, September 16, it would be practically impossible to determine the origin of her infection, since there is every possibility of her father transmitting the disease to her. On the other hand, if her father had not become infected until his stop at Hotel C, it would be easy to trace the origin of her infection to the same hotel. Transmission of this disease from one member of the family to another is easily conceivable. Assuming that her infection was contracted at Hotel C, the incubation period is estimated to be from fifty-six to fifty-eight days.

CASE 7 (Dr J E Holt)—M M F, a woman aged 53, a housewife, was admitted to the hospital November 21 complaining of vague abdominal distress with diarrhea, which had been present, more or less during the past four months. July 18 while staying at Hotel P in Chicago the patient was seized with severe pain in the abdomen. She was seen by the hotel physician, who treated her symptomatically. There was much gas in the bowels but little diarrhea. She had a slight rise in temperature and some anorexia. She returned home, July 22. Her condition had not improved. Three days after her return, she consulted a physician. She had a temperature of 102. A diagnosis of "colitis" was made and she was admitted to a local hospital in the first part of August. Her complaints remained the same. She had spells of diarrhea, gas in the bowels and abdominal pains and distress. The temperature ranged from 99 to 101. The stools were examined and reported negative for amebas as were the various agglutination tests on the blood. She was given a course of treatment, including medicated enemas. Since discharge from the hospital, her condition had remained essentially the same.

When admitted to this hospital, she was quite weak and complained of abdominal distress. The temperature was 101 and the leukocyte count 9000. A specimen of feces was obtained two days after admission. It was semiliquid and mixed with mucus but showed no gross blood. After a long search, two or three actively motile amebas, morphologically characteristic of *Endamoeba histolytica* were found. None of them, however, showed any ingested red blood cells. In view of the history which elicited her earlier visit to Chicago from July 4 to July 9, when she was registered at Hotel C, and of the subsequent course of her illness, it was felt justifiable to make a tentative diagnosis of amebic dysentery in order to institute a proper measure of therapy. The roentgenograms of the colon, too, revealed a characteristic deformity of the cecum and ascending colon which had been demonstrated in other cases of this series (fig 5). Three days later the leukocyte count was 6250 with 64 per cent neutrophils, including 14 per cent band forms.

The patient visited Chicago, July 4, and stopped at Hotel C until July 9. She ate at the hotel and at the fair and at various restaurants including Restaurant H. Her subsequent visit to Chicago occurred on July 15. She stopped at Hotel P and became ill while there. This gives an incubation period from nine to fourteen days.

Emphasis may be made of the extreme difficulty in examining the stools for *Endamoeba histolytica* from patients chronically ill with this disease in whom other therapy including local treatment has already been given. A long and painstaking search is imperative. Yet there is every likelihood of missing the diagnosis.

CASE 8 (Dr J N Gehlen)—F B, a woman aged 30 housewife was referred to the laboratory for examination of the stools. She was not particularly ill at this time but had noted of late an increase in the number of stools from once to four or five times a day. The stools were loose as a rule but never

at any time diarrheal. They contained a small amount of mucus and gross blood at each passage. This was first noted November 3. She noticed acute abdominal cramps, in mild form, previous to movements once or twice, shortly after the onset. The specimen was represented by a few well formed, hard, small masses coated partly with a thick glairy mucus and gross blood and several chunks of thick, clear, gelatinous mucus streaked with fresh blood. *Endamoeba histolytica* was present in typical form and large numbers, actively motile and ingesting red blood cells.

The patient was in Chicago, stopping at Hotel A from October 1 to October 5. She ate most of her meals at Hotel C. Her present symptoms began, November 3. The incubation period was therefore between twenty-nine and thirty-three days.

This patient represents the majority of ameba-infested individuals, in whom the symptoms are so negligible that under ordinary circumstances no medical advice may be sought by the victim.

CASE 9 (Dr Max Hoffman)—E H, a woman, aged 38, housewife was admitted to the hospital November 30, because of a slight diarrhea of a week's standing. There was no appreciable abdominal distress and no rise in temperature. A few days before admission, her attention was called to a radio talk on amebic dysentery in Chicago and also to an instance in which death presumably occurred from this condition. The stools were semiliquid and contained much mucus and a small amount of gross blood. There were many dead, vacuolated amebas few sluggishly motile and one or two containing fresh red cells. Amebic dysentery was tentatively diagnosed and saline catharsis was ordered to obtain specimens from the cecum and high up. Many actively motile amebas characteristic of *Endamoeba histolytica* were demonstrated in the subsequent specimens.

The patient was in Chicago from September 8 to September 11. She and her husband stayed at a private home while visiting the fair. They ate two breakfasts at the home, one at the M F Restaurant and the remaining meals at the fair. She had been perfectly well until the onset of the present illness, which occurred, November 24, while on a hunting trip in the Northern woods. She had moderate diarrhea. This she attributed to the strenuous walk and chilling incident to hunting. There were no abdominal cramps or distress. The incubation period was from seventy-four to seventy-seven days in this case.

This is the only case of the series in which the hotels in the loop district of Chicago are not involved as the source of infection, which may be traced to the concessions on the fair grounds, the private home or a downtown restaurant. This is an example of an early case in which the lesion was apparently limited to the cecum, in which typical motile amebas were demonstrable only in stools obtained by catharsis. The roentgen examination of the colon in this case revealed only a slight degree of spasticity at the cecum and along the sigmoid and no appreciable amount of induration, shortening or filling defect such as observed in other cases of this series, indicating apparently an early stage of the disease.

SUMMARY AND COMMENT

1. Case 1 was diagnosed and the source of infection fairly definitely traced to Chicago one month before the public announcement of the outbreak in that city by the Associated Press November 10. Within twenty days five cases of amebic dysentery were diagnosed, and within a space of forty-seven days a total of nine cases all traceable to Chicago were recognized through this laboratory, a unique experience for one hospital of an average capacity in this part of the United States.

2 Clinically, cases 1 and 5 are of unusual interest because of their presenting symptoms and of the manner in which they were treated and diagnosed. Amebic proctitis may be confused with an infiltrating type of a growth, while amebic colitis of the cecum and ascending portion of the colon may be mistaken for a tumor or inflammatory mass requiring surgical intervention.

3 Case 6 illustrates the fact that the onset of the disease may be of dramatic suddenness without any apparent prodromal signs. An acute surgical condition of the abdomen may easily be considered, especially in children.

4 Case 7 represents a large group of neglected and mistreated patients in which the diagnosis is missed and the condition treated as "colitis" without specific therapy. Cases such as this may furnish many a difficult and embarrassing moment to the pathologist on whom the final diagnosis must rest probably because of the altered intestinal flora occasioned by local medication.

5 Cases 8 and 9 are examples from another large group, representing those innocent carriers who show no appreciable signs or symptoms of intestinal disorders and therefore ordinarily do not consult a physician. They constitute a dangerous group in which lies a continued danger to public health.

6 Cases 2, 3 and 4 illustrate a typical clinical picture of acute amebic dysentery in different degree of severity. Case 2 may be properly considered as a recurrent acute type from the history and manner of onset. The patient was quite toxic and showed a definite enlargement of the liver. Patient 4 was extremely toxic and showed a fulminating clinical picture. Her stools suggested a mixed infection in the colon. Case 3 presented a typical case of less severe type in which the condition was recognized and the treatment instituted immediately.

7 The approximate incubation period varied from seven to fifteen days to from seventy-four to seventy-seven days. More interesting was the number of days between the probable day of onset and the day of diagnosis. This varied from one day and two days to 125 days. In cases 1, 5 and 7 the diagnosis was not made when first seen by the physician. It was three days in case 1, sixty days in case 5, and 119 days in case 7 after the first visit to the physician that the diagnosis was definitely established. In cases 5 and 7, the original physician was no longer in attendance when the diagnosis was made. In cases 1, 2, 5 and 6 the discovery of *Endamoeba histolytica* by the laboratory was a distinct surprise to the attending physician, in others the condition was more or less suspected clinically, owing probably to the wide discussion of the cases already discovered in the hospital (and not due to the newspaper publicity). Patient 9 sought medical advice through a radio talk.

8 The physical appearance of the first stool was more or less characteristic, mucus and gross blood were prominently visible in six instances. In case 6 it was mushy and bulky and contained much mucus but no gross blood. In case 7 it was semiliquid and mixed with mucus but showed no gross blood. The variation in the character of the stools may be accounted for by the chronicity of the infection and the type of local treatment, which may change the physical and chemical nature of the fecal flora.

9 Laboratory diagnosis in each instance was made on the first specimen of stool with little difficulty. In case 7 it was necessary to make a prolonged search before the few organisms were partly identified. They might well have been missed under ordinary circumstances. The cysts of *Endamoeba histolytica* were found in three cases, in the first stool in cases 1 and 6, and after the institution of treatment in case 5. The disappearance in every case of motile amebas is sudden and dramatic within the first few days after emetine treatment is begun.

10 The origin of this infection, traced to Chicago, may not be confined to one or two hotels and restaurants, as generally believed. It is probable that a few other hotels and eating establishments and perhaps some central meat, vegetable and fruit supply houses may also be involved. It is not probable that eating concessions at the fair were a source, since all fair employees were given an examination before they were hired.

11 Another interesting feature of this series is the observation that nearly all the victims are the members of the higher social circle, whose hygienic habits are of the best.

12 During this period of six weeks, we have examined a large number of stools from twelve or more patients who had diarrhea of from a mild to severe degree with negative results. In at least one or two of them we may have missed the amebas or their cysts. Two members of the family of patient 3 showed the stools infested with *Endamoeba coli*.

SYMPTOMATOLOGY

The individual resistance and the character of the intestinal flora probably play an important part in the duration of the incubation period and the manner of onset in amebic infection in man. The incubation period in man is variously estimated at from five to 100 days. The usual prodromal signs of infection may often be so insignificant as to escape notice or may be entirely absent. The onset may be sudden, as in acute "surgical abdomen," for which operative measures have been considered. It may be insidious and indefinite. The presenting symptoms usually consist of abdominal discomfort in the form of severe cramps or gaseous distention and general soreness or a localized tenderness over the cecal area with or without diarrhea or frequent desire to evacuate. Diarrhea with the passage of mucus and blood, may be the most prominent initial feature, or it may be secondary or absent. Pains and tenesmus in the rectum may often be troublesome. The symptoms may soon disappear and be forgotten. One or several recurrences of the symptoms, often in more severe form may induce the patient to seek medical advice. There are doubtless many who consider the incident as an instance of "indigestion" or temporary bowel trouble attributable to dietary indiscretion and who fail to consult the physician. A few of the acute cases may develop severe, toxic symptoms with a high fever and an increased leukocyte count and a high percentage of young neutrophils ("band" form). Practically all cases, regardless of the degree of severity of the symptoms, readily respond to the specific therapy, as is shown by the rapid clinical improvement and disappearance of gross blood and amebas from the stools, as shown in the accompanying table.

LABORATORY DIAGNOSIS

The identification of *Endamoeba histolytica* is not always as simple as is generally believed. The character

of the stools in amebic dysentery may vary considerably. They may be liquid, soft and mushy or formed. Liquid, semiliquid or soft stools are the rule. A single amount is usually small. The most prominent feature is the conspicuous presence of mucus and gross, fresh blood. Often a sample of stool may be represented entirely by a small quantity of mucus and blood. The mucus is thick, glairy, transparent and usually unmixed with pus. It is not dull and membranous as in mucous colitis. The presence of pus usually indicates secondary infection or other coexisting acute inflammation and is not a cardinal feature.

Endamoeba histolytica is searched for in a small drop of the mucus mixed thoroughly in warm saline solu-

tion their demonstration in the majority of cases. The amebas ingesting fresh red blood cells are practically always demonstrated in acute cases, but in chronic or mistreated cases it may be practically impossible to find them. On standing, the amebas may undergo changes which may allow the formation of vacuoles or, occasionally, the invasion of bacteria and may cause the nucleus to appear more distinctly. All these possibilities must be borne in mind, since the specimens of feces submitted are not always typical or as desired, nor are the typical specimens obtainable.

While, therefore, I follow the teaching of the authorities that the finding of red blood cells within the vegetative form of amebas and the demonstration of

Observations in Nine Cases of Amebic Dysentery

Case	1	2	3†	4	5	6*	7‡	8	9
Name	C. B.	T. P.	P. B.	J. O.	H. C.	R. P.	M. M.	T. B.	E. H.
Sex	♂	♂	♂	♀	♂	♀	♀	♀	♀
Age	59	52	40	41	51	10	53	50	83
Days in hospital	10/10 (out patient) 10/18-20	10/19-11/5	11/2-11/26	11/7	10/12-17 10/31-11/16	11/13-23	11/21	11/23 (out patient)	11/30
Visited to Chicago hotels and dates	H. C. 8/15-24	Rest. H. 7/20-30 H. P. 3/26-30 H. P. 4/6-8 H. E. 5/4-5 H. M. 5/6 H. E. 5/31-6/5 H. P. 6/8 H. C. 9/16-18 H. L. 10/11-18	C. C. 10/14-16 H. St. 10/21-22	H. C. 9/24-27 H. E. 2 mos before	H. A. 6/19-23 9/15-16 10/3-4	H. C. 9/16-18	H. C. 7/4-9 H. P. 7/15-22	H. A. 10/1-5	Private home 9/8-11
Meals at	H. C. Restaurant Fair (1)	Restaurants Hotels Fair (2)	C. C. Restaurants Fair H. C. (1)	H. C. Fair?	H. A. Restaurants	H. C. Fair	H. C. and P. Restaurants Rest. H. Fair	H. C. mostly	Fair (mostly) Home (2) Rest. (1)
Onset	9/1	7/1? 10/12?	11/1	10/20	8/10	11/13	7-18	11/3	11/24
Probable incubation	7-15 days*	24-26 days?	10-17 days	23-26 days	50-57 days	56-58 days	9-14 days	29-33 days	74-77 days
Diagnosis made on	40th day	7th or 92d day	2d day	18th day	60th day	1st day	120th day	20th day	6th day
Diagnosis made by physician on	3d day	?	1st day	?	60th day*	1st day	119th day*	1st day	1st day
Stage	Subacute	Acute recurrent	Acute	Acute	Subacute	Acute	Chronic	Mild subacute	Mild acute
Symptom and condition	Rectal (biopsy) mild abdominal	Abdominal toxic enlarged liver	Diarrheal abdominal	Abdominal toxic diarrheal	Rectal (biopsy) abdominal	Abdominal	Abdominal distress	Increased stools no diarrhea	Diarrhea (only)
Temperature	100	103	102	102.4	98.6	98	101	Normal?	99.8
White blood cells	6,000	22,000	22,000	19,400	7,000	10,400	9,000	?	6,600
Fir stools	Semiformed mushy mucus C blood	Semiliquid pus mucus C blood	Semiliquid mucus G blood	Watery mucus G blood	Soft mucus G blood	Bulky mushy mucus	Semiliquid mucoid	Formed mucus G blood	Semiliquid mucus G blood
Endamoeba	Many	Many	Many	Many	Many	Many	Scarce	Many	Many
Cysts	+				+	+			
Laboratory diagnosis	At once	At once	At once	At once	At once	At once	One day	At once	At once
Stool on discharge	Cysts	Negative	Negative	Negative	Cysts	Negative	?	?	?

* Acute attacks before admission

† Wife and daughter show *Endamoeba coli* in stool

Daughter of patient 2. Mother showed *Endamoeba coli*

‡ Her husband at Hotel C. With her - 49 died of multiple penetrating jejunal ulcers 10/20. No amebas demonstrated in the lesion to date

Amoeba with ingested fresh red blood cells demonstrated in every case

tion first under the lower power objective. The following criteria are considered essential in the identification of *Endamoeba histolytica* under the high power lens. 1 The motility is active and progressive, extremely so under favorable conditions. 2 The pseudopodia are clear, transparent, tongue-like or finger-like and often well demarcated from the endoplasm. 3 The endoplasm (cytoplasm) is finely granular, ground glass like and when fresh contains no bacteria, food particles, vacuoles and the like and usually shows no clear outline of the nucleus. 4 The amebas ingest fresh red blood cells. 5 The typical four nucleated cysts should be demonstrated. The cysts are not observed as a rule during the acute stage and therefore the diagnosis may have to be made without

the four nucleated cysts should constitute the final diagnostic criteria of *Endamoeba histolytica*, I feel that, in experienced hands, a positive diagnosis, without either of the two may be justified, at least in the face of an outbreak such as has been witnessed. Thus, when the lesion is confined in the cecum alone as is often the case during an early stage of the disease, the amebas may undergo changes during the passage through the remaining colon and not be found alive on reaching the rectum. One with experience may recognize them and order immediate catharsis to confirm the diagnosis.

In the absence of diarrhea or of gross blood and mucus the stools should be examined particularly for the encysted form. A saline purgative should then be

given to obtain a liquid passage. No final negative report should be given until at least three samples have been carefully examined.

A danger of a false positive report by the inexperienced is increasingly evident, especially in a sudden outbreak such as this, when technicians and clinical pathologists of limited experience on medical protozoology are called on to examine the stools from suspected individuals. Their negative report may be equally dangerous. It is evident that those who engage in the practice of laboratory medicine must be fully prepared to meet the situation, in the future. The present outbreak has afforded some of us the opportunity of further study on this particular type of intestinal protozoa.

An attempt to cultivate the amebas on artificial mediums has not been as successful as anticipated. The best that could be accomplished was the apparent prolongation of the life and active motility of the amebas for a period of forty-eight hours, Locke-egg-serum medium and liver infusion agar medium being used. Transplants were only partially successful.

A possibility of the routine use of the complement fixation test in amebiasis strongly suggests itself at this time. Such an attempt should be made in these as well as in other cases. The experimental work has already been successfully carried out by Craig,³ Sherwood,⁴ and others and has introduced a promising field in laboratory diagnosis of this disease.

According to Craig,⁵ Dobell claims that a single examination of the stools should develop about one third of the actual infection, while three examinations should show between one half and two thirds of the actual number of cases. Lynch⁶ emphasizes that "only a few are considered competent to identify anything but the cyst." Definite identification of *Endamoeba histolytica*, therefore, is not only a difficult task but, at times, a time-consuming procedure which should be fully appreciated by the medical profession.

ROENTGEN OBSERVATIONS

Roentgen study of the colon was carried out in six of these cases. In four, cases 1, 6, 7 and 9, the roentgenograms were made before the specific therapy was started, and in two, cases 2 and 5, they were taken after a course of treatment had been completed. In case 5 a previous roentgen examination of the colon had been made elsewhere, two months before the diagnosis of amebic dysentery was made but several weeks after the onset of the illness. There are, therefore, the roentgenograms in five cases, 1, 5, 6, 7 and 9, before treatment and in cases 2 and 5 after the first course of treatment. Patient 6 is a child and was examined on the day of onset, and the roentgenogram failed to show any particular changes on the films except possibly a slight spasm of the descending colon. In case 2, a treated case, and case 9, an early case, the observations were doubtful but suggestive in the light of those in the roentgenograms of the remaining cases, 1, 5 and 7.

3 Craig C F. Further Observations on the Complement Fixation Test in the Diagnosis of Amebiasis. *J Lab & Clin Med* 18: 873 (June) 1933. Craig C F, and Kagy Edwin. A Study of Complement Fixation in Experimental Amebiasis in Dogs. *Am J Hyg* 18: 202 (July) 1933.

4 Sherwood N P and Heathman Lucy. Further Studies on the Antigenic Properties of Pathogenic and Free Living Amebae. II. Complement Fixation in Amebic Dysentery. *Am J Hyg* 16: 124 (July) 1932.

5 Craig C F. Parasitic Protozoa of Man. Philadelphia J B Lippincott Company 1926 p 43.

6 Lynch K M. Protozoan Parasitism of the Alimentary Tract. New York Macmillan Company 1930 p 40.

The roentgen observations in amebic dysentery confirm the presence of the characteristic pathologic lesions, which are confined at first to the cecum, ascending colon and rectum. Not only the mere presence of the lesion but the character of the lesion is portrayed, particularly as it affects the proximal segment of the colon.

In none of the cases is spasm a prominent feature, in fact, very little spasticity is noted during fluoroscopy. No appreciable abnormality is noted until the barium mixture reaches the proximal portion of the colon, which fills readily and shows no suggestion of spasm during the period of fluoroscopic observation. The cecum appears elevated and the lumen diffusely narrowed and contracted and its outline irregular. There is no usual soft flexibility on manipulation but, on the contrary, a distinct induration and resistance. The ileocecal valve is widely patent, allowing the mixture to flow freely into the terminal ileum. The terminal ileum, too, presents an appearance somewhat similar to that of the adjoining portion of the colon. The appearance of the colon, fluoroscopically as well as roentgenographically, is easily interpreted as being due to a diffuse, irregular infiltration or induration similar in character to chronic hyperplastic tuberculosis or possibly diffuse infiltration of a tumor such as leukemia or Hodgkin's disease. In the absence of active spasm, tuberculosis may be ruled out but not definitely. Our diagnosis in case 1 rested between a chronic nontuberculous inflammation and an infiltrating growth, involving the cecum and ascending colon. In the light of the subsequent development, it is now easy to interpret the manifestations as being due to amebic colitis. The filling defects are caused by multiple, deep irregular ulcers with an overhanging edge and a diffuse edema and exudation involving all the layers of the wall but particularly the submucosa. The narrowing of the lumen is doubtless caused by a great inflammatory thickening of the wall. The shortening of the cecum is probably due to the semipermanent, spastic contraction in the presence of diffuse inflammation and fibrosis. This also results in the induration of the ileocecal ring, which causes a constant backflow of the colonic contents and consequent involvement of the terminal ileum. A somewhat similar appearance is obtained in the transverse colon of patient 7, who had been ill with "colitis" for many weeks before the diagnosis was finally established. This merely indicates the extension of the process into this portion of the colon. The roentgenograms in case 2, obtained after the patient had been discharged, reveal little of the changes here described. This may be explained by the fact that too much repair had already taken place in the wall of the colon to show the changes that may be present during the active stage of the disease.

The roentgenograms in these cases represent a picture depicting a well established pathologic lesion in the cecum and the ascending colon. Roentgenograms in an earlier stage of the disease, if obtainable, may show active spasticity and less pronounced deformity, filling defect and induration, as are suggested by the observations in cases 6 and 9. In case 5, in which the presence of motile amebas in small numbers was noted at the time of discharge from the hospital, when the roentgenograms were made, small irregular defects along the transverse portion as well as along the sigmoid and the rectum were observed, indicating the presence of active pathologic changes in these areas.

It should be emphasized that these roentgen observations are not specific for this disease but are merely an exact silhouette of the well established pathologic processes in the colon, occasioned by the invasion of *Endamoeba histolytica*, and may be of aid in determining the extent of involvement and in the differential diagnosis

PATHOLOGY

No death occurred in this series of nine cases. No material was therefore available for histopathologic study, for which the standard textbooks on pathology and a large number of publications on this disease are available. A monograph on amebic dysentery by Councilman and Lafleur¹ is considered a classic on the pathology of amebiasis.

Fortunately, a small piece of tissue from the rectum in case 5 furnishes an example of a characteristic initial lesion of this infection and may be described in detail.

It illustrates clearly the mode of invasion of these protozoa through the mucosa, which shows a slit or creta-like ulcer. This communicates with a large space in the submucosa caused by the cytolytic action of the invaders and filled with thick masses of mucus, containing only a few monocytes, neutrophils and eosinophils. One is impressed with a marked secretory activity of the epithelial cells and the type of exudate, which is nonpurulent and largely consists of mucus-like material. This may be considered an early, uncomplicated lesion due to the invasion of *Endamoeba histolytica*. A diligent search, in the serial sections, reveals a nest of amebas in the thick mucous secretion, which is adherent to the deep layer of the mucosa, constituting the inner lining of the space. With the advance of the process, coupled with the secondary infection that is bound to take place, this lesion will undoubtedly develop into a deep, irregular, undermining ulcer with an overhanging edge (figs 3 and 4).

Amebic lesions elsewhere in the body as a complication of intestinal amebiasis are not uncommon in the tropics though extremely rare in the Northern climate. Amebic liver abscess is occasionally encountered in Minnesota as a complication of a chronic amebic infection. I encountered in May, 1933 a case of amebic liver abscess rupturing into the pleural cavity, with metastatic pulmonary and cerebral abscesses and terminal embolic abscesses in the spleen and the wall of the small intestine in which the only demonstrable primary amebic lesion in the colon was represented by a small infected diverticulum located in the sigmoid (fig 6), though the stools contained, at times *Endamoeba histolytica* in large numbers and actively motile. This case is an example of a chronic amebic carrier who had never experienced any intestinal disorders but succumbed to a widespread systemic complication.

CONCLUSIONS

1 Nine cases of amebic dysentery were recognized within a period of forty-seven days in a general hospital of an average size in a Northern city of 250,000 population, in the United States. This is a unique experience. Infection in all nine cases was definitely traced to Chicago which demonstrates probably a widespread dissemination of this disease throughout the country as a direct result of the Chicago epidemic.

2 The presenting symptoms show a wide variation, depending on the character of the attack and on the stage of the disease.

3 The initial symptoms, when elicited, are not always identical. There are atypical cases in which the first symptoms may be misleading or so insignificant and commonplace that no medical relief is considered necessary by the patient.

4 There is danger of a false positive report in the laboratory diagnosis of this disease by the inexperienced. Careful and painstaking search for the organism should be undertaken in suspected and neglected cases.

5 Roentgen examination may be of value as an aid in differential diagnosis.

6 Amebas were demonstrated in a section of a piece of tissue from the rectum, in a case suggesting a malignant growth. The histologic appearance of the lesion presents the characteristic initial changes due to the invasion of *Endamoeba histolytica*.

DOUBLE PULLEY TRACTION IN FRACTURES OF THE SHAFT OF THE HUMERUS

REPORT OF CASE

LESTER BLUM, M.D.

NEW YORK

It has been the custom in the surgical service of the Beekman Street Hospital to treat the majority of fractures of the shaft of the humerus with skin traction, using the Blake board, the forearm being suspended at right angles to the arm. This method, while it has produced good functional results, has definite disadvantages. The anatomic result is often only fair and may occasionally be termed poor. It is not feasible in compound fractures. There is a constant tendency for the adhesive to slip, and in some cases the irritation of the skin constitutes a real problem. When the patient is an unusually muscular individual or the fracture is compounded, pin traction through the olecranon or the lower end of the humerus is employed. This is an operative procedure of some technical nicety, of use only in adults, and the end-result may be no better than with the use of skin traction.

Some years ago, Russell¹ introduced his well known method of traction for use in the treatment of fractures of the femur. He described certain technical specifications at which he had arrived on an empirical basis that, on mathematical analysis, have been shown to subserve the main purpose of attaining more accurate axis traction. By observing these principles I have been able successfully to adapt a similar type of traction for use in humerus fractures.

The apparatus (fig 1) consists of a broad, well padded cuff which partially encircles the elbow, with its pressure broadly distributed over the skin of the cubital fossa. There is a continuous length of rope leading from the cuff around single pulley A through part of double pulley B, to pulley C which is incorporated in the hand spreader, and back to the other part of double pulley B to suspend the weight. The spreader is attached to the forearm by moleskin strips. The entire system is carried by a right angle frame, which is so constructed as to allow movement of pulleys A and B without releasing the traction. The frame is attached to the Gatch portion of the bed so that the

¹ Councilman, W. T. and Lafleur, H. A. Amebic Dysentery. J. R. H. Inc. H. K. 2: 1931.

From the surgical service of the Beekman Street Hospital.
¹ Russell, P. H. Fracture of the Femur. A Clinical Study. Brit. J. Surg. 11: 491-502 (Jan.) 1924.

entire apparatus moves as the patient is raised up in bed without the essential angles being altered. The arm rests on a soft pillow and is held at 90 degrees abduction from the body. This side of the bed is raised on shock blocks about 3 inches. A Balkan frame is used merely to offer greater security to the traction frame and to help the patient adjust himself in bed. It is not a necessary part of the apparatus.



Fig 1—The patient as he actually appeared in the double pulley traction apparatus. He is shown with the head of the bed elevated to about 45 degrees. The lowest pulley is marked *A*, the one farthest from the patient is double pulley *B*, and the pulley on the hand spreader is marked *C*. The felt protecting the skin of the cubital fossa is completely hidden by the cuff. The shock blocks elevating this side of the bed are not visible.

We believe that there are definite advantages in the treatment of fractures of the shaft of the humerus with this system. It offers an easily adjustable method of attaining mathematically accurate axis traction (fig 2). There are two directions of pull, as shown in figure 2. One is somewhat downward (*OA*), transmitted through the cubital cuff, and is equal in force to the suspended weight. The other (*OB*) is upward, transmitted through the hand spreader, and is equal in pull to twice the suspended weight, since it is a double pulley system. The resultant (*OC'*) of these forces, lies one third of the distance nearer the greater force (*OB*). By simple adjustment of the pulleys on the frame, these angles can be so arranged in any given case as to throw the resultant in accurate alignment with the proximal fragment. The arrangement can be made by gross estimate and can be accurately checked by measuring the angles on the roentgen film with a protractor. The resultant pull is usually equal to a little more than twice the suspended weight.

In the second place, the entire arm is free. This is of importance in compound fractures and is of readily apparent value in the administration of physical therapy. In other types of traction, any attempt at elevating the head of the bed inevitably results in some alteration of the line of traction, with the false point motion at the site of fracture. In this system the essential angles are not altered by raising the patient in bed. This has been checked by the fluoroscope. The advantage of being so able to elevate the head of the bed, especially in elderly patients, is quite obvious.

REPORT OF CASE

N A, a Negro youth, aged 13, admitted to the Beckman Street Hospital, May 7, 1933, had just injured his right arm in the subway. Clinical and fluoroscopic examinations of the arm, to which emergency traction had been applied, revealed an oblique fracture at the junction of the middle and lower thirds of the shaft of the humerus. There was about half an inch overriding and definite anterior angulation. He was immediately put up in double pulley traction with 3 pounds weight. After seven hours, it was noted that the anterior angulation was still clinically obvious, and so a half pound was added. A roentgenogram after twenty-four hours revealed excellent alignment with no angulation nor overriding. By measuring the angles with the protractor and calculating the resultant, we discovered that we had empirically attained what was mathematically the correct line of pull. The weight was reduced to 3 pounds to avoid overpull and the roentgen check-up, twenty-four hours later, showed no change. The patient during this time was perfectly comfortable, the only sedatives used being phenobarbital and codeine, which were given for the first three nights. There was no complaint of antecubital pressure, or of tingling or numbness of the finger and the patient was raised up for meals and lowered to the supine position in the evening. He was able to pronate and supinate his forearm. On the fifth day, a sling balanced by a weight was substituted for the pillow as support for the arm. A check-up film, after twenty-four hours, revealed that the addition had so disturbed the equilibrium of forces by its anterior pull as to result in an anterior angulation with a deviation of 22 degrees of the lower fragment. To remedy this the original pillow was restored, the sling was discarded and the angles of the apparatus were adjusted, without a change being made in the weight, so that the resultant was again in alignment with the proximal fragment. We were successful in correcting the position so that on the lateral roentgen view there was only 10 degrees anterior bowing, and on the anteroposterior view the alignment was almost exact. A roentgenogram on the seventeenth day revealed the presence of callus, which was even more evident on the twenty-sixth day.

On the thirty-seventh day, it was felt that the patient could with safety be removed from the apparatus. This was done, and he was allowed up with the extremity in a sling, and bass

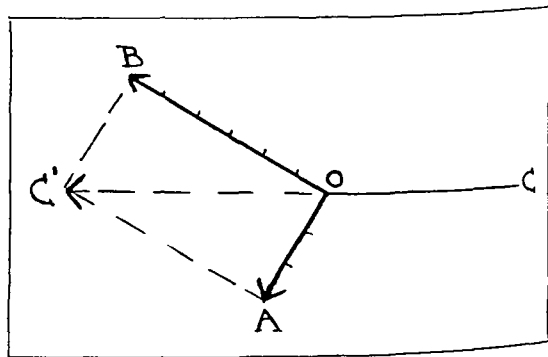


Fig 2—*OC* represents the line of the shaft of the humerus. *OA* is the line of force pulling through the cubital cuff; its length is equal to three units (or pounds). *OB* is the line of force pulling through the hand spreader; its length is equal to six units (or pounds). *OC'* represents the resultant pull both in direction and in force; it can be arithmetically calculated or can be worked out trigonometrically as here shown by taking it as the diagonal of the parallelogram of forces.

wood coaptation splints to the arm. There was no evidence of any impairment of function of the elbow joint. Active motion was immediately instituted.

COMMENT

I believe that this is a simple, easily applied type of traction, which involves neither operative procedure nor anesthesia and offers certain definite advantages in the treatment of fractures of the shaft of the humerus.

117 Beckman Street

TRACING THE TRANSMISSION OF SYPHILIS

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AND

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There is an attitude of aloofness shown by physicians in all branches of medicine toward the prevention of syphilis. This is due partly to the absence of proper example and leadership by the syphilologists, syphilis clinics and epidemiologists. Sexual transmission with its moral aspects has seemed to be an insurmountable hazard but is actually only a mental handicap. In fact, this type of close contact makes a source of infection easier to determine.

The average physician and specialist does not often look beyond the syphilitic patient. He shies away from seeming to seek patients and becoming embroiled in domestic affairs. Some of this attitude is due to false professional ethics and part is due to lack of energy and patience. The problem is such an enormous one

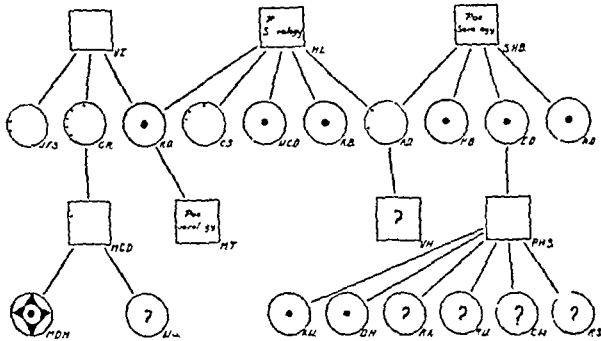


Chart 1—Group in which all follow up measures were used

when tackled in a wholesale way that most epidemiologists have not had the daring to assail it.

All of the facts necessary for an effective epidemiologic attack against syphilis are known, at least to the point of practical application. Several lines of approach to the problem are frequently mentioned. These are education (lay and professional), medical prophylaxis, isolation of infectious cases, modern treatment, determination of sources of infections and follow-up of contacts. Prophylaxis, treatment and isolation have received the greatest attention in parts of Europe, and it is estimated that the incidence of syphilis has decreased 50 per cent. Education, particularly as related to sex hygiene and morality, has had the major role in the United States and apparently it has been of little value in preventing the spread of the disease. The horrible ocre of immorality has caused the living aside of valuable prevention tools. The American epidemiologists and syphilologists have joined hands with the societies for the suppression of vice instead of

setting to work against this communicable disease. It is true that the public, syphilitic persons and others, has traditional feelings about this malady and its relation to vice. The medical man should consider this as a fact but should not be forced off the main track by it. Thought has been centered too much on removing the sin rather than reducing the penalty.

The determination of the sources of infection and the follow-up of contacts have not received either abroad or in this country the emphasis they merit. These phases, analogous to the carrier problems of other communicable diseases, have all but been completely ignored both in practice and in the literature. Sources of infection may be easily determined since only a few persons would be suspected. Elaborate investigation is unnecessary. The patient in the office or clinic may be depended on to give the desired information.

It has been assumed that the follow-up of contacts and the follow-back to the origin of the contagion is idealistic but impracticable, because patients will not divulge the names of sexual partners. It can be stated emphatically that such is not the case. This method of approach has been carried out as a routine measure for the past several years in the University of Virginia Hospital and Clinic, and the results are quite requiring. In some instances the patients are unable to name their consorts, but in only two occasions have we had patients deliberately refuse to name them. In one of these episodes a second patient was the means of clearing up the focus.

This investigation requires a considerable amount of patience and tact. The subject is approached slowly, every effort being made to gain the confidence of the patient. The nature of the disease is explained in detail. After the various phases of the disease relating to the patient himself are discussed, the facts of the infection in regard to others are enumerated. When it is felt that the person's cooperation is attained, maneuvers toward securing possible sources of infection and contacts since infection are made. If the first attempt is unsuccessful, other attempts may break the barrier. Usually several efforts at different visits are necessary before all the relevant information

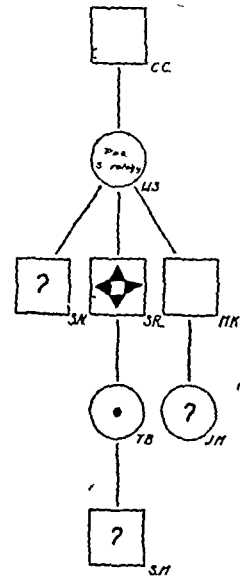
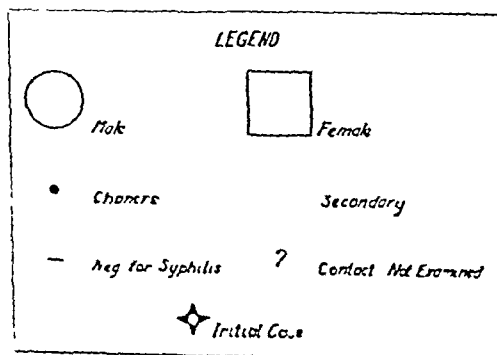


Chart 2—Illustrative group showing contacts of a syphilitic patient



From the Department of Dermatology and Syphilology, University of Virginia.
Read before the Section on Dermatology and Syphilology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1954.

is obtained. The names and addresses of all contacts and consorts are determined. These are not recorded in writing in the presence of the patient.

The contact without a complaint who comes in for consultation offers a slightly different type of problem. It is explained why he was advised to come for examination. Emphasis is placed on this attempt to look after his safety and the welfare of others. The importance of syphilis as a disease

is stressed. He is also questioned about other contacts. He is asked for the names of other persons who have been associated with any of his consorts. When the patient or contact hesitates to reveal names, he is urged to advise personally those who he knows or thinks might have been exposed to seek medical advice. A number of patients and exposed contacts are thus developed into effective sanitary officers.

Occasionally a contact or patient denies sex episodes at first, but when confronted with the fact that another patient has already named him or her, they begin to talk. As an example, a girl with condylomata lata, who flatly denied sexual relations at first when interviewed tactfully, admitted one exposure. She was told that some one else had named her as a contact. Before she left the clinic she had revealed the names of seven sexual companions and had not named the person already known. In another instance, a young married woman with secondary lesions denied extramarital exposures in the beginning. During the interview she named six extramarital contacts and revealed the names of four women associated with her in clandestine prostitution.

The follow-up of contacts and tracing sources of infection in order to be most effective should be started immediately. Infectious patients should be started on sterilizing therapy as quickly as possible so as to reduce the period of contagiousness and all suspects gotten under observation to make it possible to begin treatment at the first diagnostic evidence of infection. The patient is instructed to try to get his or her contacts to be examined and advised. Letters are sent to the contacts requesting them to report for examination. A nurse may visit the contacts and urge them to see the physician. When all other measures fail, the suspects are reported to the health officer.

To have contacts come for examination through the advice of their friends or associates is ideal. Each new patient informs his friends in turn until all contacts are brought under observation. A small group which was cleared up entirely in this way is shown in chart 3.

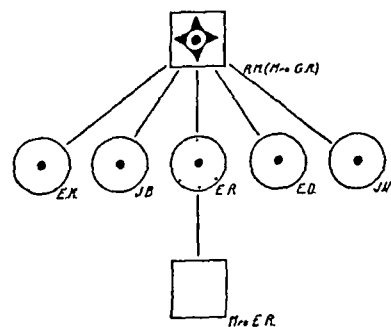


Chart 3—Illustrative group showing contacts of a syphilitic patient

he also may have acquired it. No mention of syphilis is made, although it is written on the stationery of the department. If no response is had, a second letter is mailed strongly advising examination. Copies of all letters are put with the suspect's hospital chart, if he has one, and then if he should report to the hospital for any purpose he will be properly referred. Occasionally the patient is unable to give the addresses of contacts and a few letters are returned unclaimed, but on the whole the results have been very satisfactory.

An intelligent nurse can persuade contacts to report when other methods have been unsuccessful. The aid of the health department is solicited only as a last resort. Persuasion is better than enforcement procedures.

Indexed punch-cards were made in our clinic and private practice covering a period of about twenty months and from these the following data were tabu-

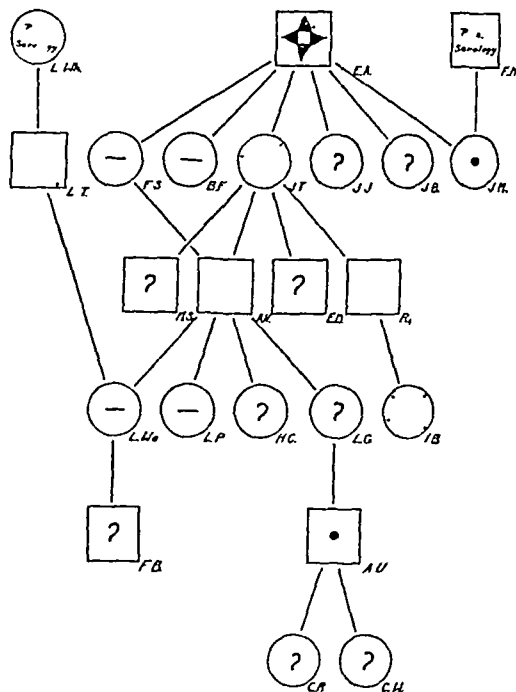


Chart 4—Illustrative group showing contacts of a syphilitic patient

lated. Exclusive of family surveys in heredosyphilis, cases in which sources of infection were not known or could not be reached and late or tertiary cases, there were 119 patients questioned. There were 242 names of contacts given. There were 196 individual names, exclusive of duplicates. There were 93 cases of syphilis discovered and treated by us. The number of persons stimulated to seek examination and treatment elsewhere is not known.

Tables 1 to 5 summarize promiscuity rate, contact rate, infection rate, stage of infection of source cases and results of case investigations.

Chart 1 shows a group in which all follow-up measures were used. Nineteen (thirteen men and six women) in this group of twenty-five persons were investigated in the clinic. All of these were found to be infected. Seven had secondary lesions at the time of admission. Nine men had primary lesions at their first visit. The diagnosis was made in three women by positive serologic tests. All of the men and five of the women were handled by letters or messages and the visiting nurse. The aid of the health department was necessary in one instance. Undoubtedly some of these persons would have eventually obtained proper medical attention had a follow-up study not been attempted, but they were brought under treatment earlier than would have been the case otherwise. The period of infectiousness was shortened and the possibility of cure increased. The diagnosis was made at the earliest possible moment in those persons seen dur-

TABLE 1—Discovery of Exposed Persons Through Questioning of Original Patient and Admissions to the Clinic Consequent on Follow-Up

	Orig inal Cases	Named	Per sons Repre sented	Contacts					
				Consequent Admissions					
				Voluntary		Follow Up		Total	
				No	%	No	%	No	%
White	52	104	83	14	16.8	33	39.7	47	56.5
Negro	67	133	113	13	11.5	33	29.2	46	40.7
Total	119	242	196	27	13.7	66	33.7	93	47.4

TABLE 2—Admissions to the Clinic of Persons Named as Contacts by the Original Patient Consequent to Various Agencies of Approach or Because of Their Own Volition

Follow Up Through	Consequent Admissions to Clinic					
	White		Negro		Total	
	M	F	M	F	M	F Both
Friends	13	4	3	5	16	9 25
Letters	2	6	1	4	3	10 13
Clinic physician	4	1	15	3	19	4 23
Health officer	0	3	0	2	0	5 5
	19	14	19	14	33	23 66
Voluntary	7	7	3	10	10	17 27

TABLE 3—Number of Exposed Contacts per Case and Estimated Number of Infected Contacts per Case Obtained by Follow-Up Investigation

	Exposed Contacts						
	Admitted to Clinic			Estimated			
	Orig inal Cases (a)	Total No (b)	No per Case (c)	Total No (d)	No In fected (e)	Per Cent In fected (f)	Total No In fected* (g)
White	53	53	1.59	47	40	85.1	71
Negro	67	113	1.68	46	34	73.9	84
Total	119	196	1.64	93	74	79.6	155

* Estimated total number infected obtained by applying percentage in sample group (d) to total number of exposed contacts (b)

TABLE 4—Number of Exposed Contacts and Estimated Number of Infected Contacts per Case Known to be Source of at Least One Infection

	Exposed Contacts						
	Admitted to Clinic			Estimated			
	Source Cases (a)	Total No (b)	No per Case (c)	Total No (d)	No In fected (e)	Per Cent In fected (f)	Total No In fected (g)
White	20	71	2.7	47	35	85.3	43
Negro	23	46	2.0	34	21	91.2	42
Total	43	100	2.3	67	56	86.6	85

TABLE 5—Disease Manifestations in Forty Three Cases Known to be the Source of at Least One Other Infection

Disease Manifestations in Source Cases	White				Negro				Total			
	M		F		M		F		M		F	
	No	%	No	%	No	%	No	%	No	%	No	%
Primary	2	2	2	0	2	2	2	0	5	11	9	21
Secondary	0	0	4	5	5	6	5	10	5	10	15	41
Early asymptomatic	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	2	6	13	7	13	7	25	12	25	24	100

ing the incubation period. Instructions to the latter group prevented them from transmitting the infection to others.

Charts 2, 3 and 4 are illustrative groups. Other details are shown in demonstration in the Scientific Exhibit.

SUMMARY

It is practical to trace sources of infection and exposures in syphilis. By these measures a larger proportion of cases are brought under observation, the period of infectiousness reduced and the secondarily infected ratio thereby decreased.

ABSTRACT OF DISCUSSION

DR THOMAS PARRAN, JR., Albany, N. Y. The authors have presented a new method in the control of syphilis, which to my mind is as important as the discovery of a new drug. It is up to the medical profession of this country to decide whether or not it will avail itself of this new weapon. The work of Drs. Smith and Brumfield is quite conclusive in showing that it is practical both in white and in Negro patients to trace the source of infection and to bring the sources under treatment. A physician would not consider treating a case of smallpox without investigating fully the source of infection. He would either undertake this himself or report to the health department and expect the health department to make the investigation. On the other hand, one does not feel any such responsibility in cases of early syphilis. Yet the tracing of the source of syphilis is no more difficult than tracing the source of smallpox and is just as important. As a matter of fact, it is much easier, for the person knows more definitely the source from which he may have acquired the disease. Two years ago, Dr. Munson of my staff described seventeen epidemics of syphilis that had been traced to their source. About 100 patients were located in this series of outbreaks and most of them were brought under treatment. He has since reported an additional series of syphilis epidemics. It requires patience, ingenuity and tact, but the difficulties are not insurmountable. It is up to physicians to do one of two things—either accept this as their own responsibility or report to the health department in order that it may undertake the job. We have excellent cooperation from the medical profession in New York State in our program of venereal disease control. We have found that it is practical to use not only medical officers but trained public health nurses to make these epidemiologic investigations. Dr. Smith and his associates are to be congratulated on their work. They have shown clearly that they can get 50 per cent of these cases under treatment. I am convinced that syphilis is kept alive by a series of local epidemics, which can be traced and controlled. The authors say that syphilis is on the increase. My own investigations lead me to the same conclusion. In New York State we have found that there were 3000 more cases under treatment in 1930 than in 1927. Similar studies by the U. S. Public Health Service show an increase also.

DR DUDLEY C. SMITH, University, Va. All of the 119 cases shown on the chart were in the first year of the disease. This shows that most syphilis is transmitted in the early stages. It is, of course, well known that in the later years of the disease there may be mucocutaneous relapses, which serve as sources of infection although it is not of major epidemiologic importance. It is true, as Dr. Parran states, that new cases of syphilis occur in series of more or less segregated epidemics. It should be emphasized that in this entire group the aid of the public health department was not required except in one instance. The physician is undoubtedly best equipped to handle the sociological and diplomatic phase of syphilis. Tactful persuasion after acquiring the patient's confidence prepares the ground for the epidemiologic survey as well as laying the foundation so that the patient will continue to follow directions through a minimal standard of treatment. All types of patients—intelligent, ignorant, careless, neurotic, honest and criminal—can be led a long way by a skilled and persuasive physician.

HYPERINSULINISM, A DEFINITE DISEASE ENTITY

ETIOLOGY, PATHOLOGY, SYMPTOMS, DIAGNOSIS, PROGNOSIS AND TREATMENT OF SPONTANEOUS INSULOGENIC HYPOGLYCEMIA (HYPERINSULINISM)

SEALE HARRIS, M.D.

BIRMINGHAM, ALA.

Hyperinsulinism, also called the "hunger" disease because hunger, associated with weakness, nervousness and other manifestations of hypoglycemia is the most constant symptom has been known to exist for ten years¹. At least a hundred cases have been reported by American and European clinicians, surgeons and pathologists who have made thorough studies of all phases of hypoglycemia due to the hypersecretion of the islet cells of the pancreas. Sufficient data have accumulated in medical literature to warrant the discussion of hyperinsulinism as a definite disease entity. In this paper the effort will be made to outline the etiology, pathology, symptoms, diagnosis and treatment of hyperinsulinism as derived from published reports of many cases and from ten years' study of the disease.

DEFINITION

Hyperinsulinism, the antithesis of diabetes mellitus (hypoinsulinism), may be defined as a disease of the pancreas resulting from the spontaneous excessive secretion of insulin by the islands of Langerhans and characterized clinically by hypoglycemia with its concomitant symptoms, i.e., hunger, weakness, nervousness, tremors, sweating, trembling and mental lapses. Unconsciousness and convulsions may occur in the severe cases.

Dysinsulinism is a condition, or disease, associated with the uncontrolled secretion of the islet cells of the pancreas resulting in hyperglycemia alternating with or followed by hypoglycemia, and characterized clinically by symptoms of hypo-insulinism (diabetes mellitus), and at times by the syndrome of hyperinsulinism.

Hypo-insulinism (diabetes mellitus) is essentially a disease of the pancreas resulting from the deficient secretion of insulin by the islands of Langerhans and is characterized clinically by hyperglycemia, polyuria, polyphagia, polydipsia, emaciation and weakness. Gangrene of the lower extremities, carbuncles and acidosis with and without coma, may occur in the neglected cases of hypo-insulinism.

FREQUENCY

No doubt hyperinsulinism has existed as long as has diabetes and was not recognized, just as hyperthyroidism, now known to be a frequent disease, for a long time was considered a nervous disorder and was not recognized as a disease of the thyroid. Physicians now practicing medicine can remember when the first cases of appendicitis were recognized and operations performed, and it may be predicted that in the near future hyperinsulinism will become recognized as a compara-

tively frequent disease which in most cases is amenable to treatment, either by dieting or by surgery.

A chronological review² of the cases of hyperinsulinism reported in the United States and Canada up to 1931 indicates that hyperinsulinism not only is a frequent condition but that it may cause a wide range of symptoms which heretofore have been diagnosed as being due to other causes but which in reality are manifestations of insulogenic hypoglycemia. Marsh³ in 1930 reported nine cases of hyperinsulinism, which occurred in his private practice. Jean Sigwald⁴ and Rathery report a number of cases of hyperinsulinism ("hypoglycémie par hyper-pancréatisme"). Sigwald also reviews a number of reported European cases and presents a large series of experiments on animals in which he describes the manifestations of hypoglycemia induced by varying doses of insulin. Sippe and Bostock in Sidney, Australia, in a review of the general subject of hypoglycemia, report twenty-five cases as having occurred in their private practice and in the Brisbane General Hospital. In discussing the frequency of chronic hypoglycemia they say "In a large series of cases met with in general medical practice, the percentage of cases of hypoglycemia was 0.47 and that of diabetes 0.51. Thus it will be seen that hypoglycemia is practically as common as hyperglycemia."

Cambridge in 1930 reported 200 cases of "chronic hypoglycemia." He is of the opinion that the condition is of hepatogenous origin, though he considers that the pancreas may be a contributing factor in producing the hypoglycemia.

Judging from the number of cases of hyperinsulinism now being reported by many clinicians and from blood sugar studies in 3,076 cases, in my series of 6,641 adult patients largely ambulatory with gastro-intestinal and nutritional disorders, it seems probable that hyperinsulinism is almost as frequent as the opposite secretory disorder of the insulin-forming cells of the pancreas, hypo-insulinism (diabetes mellitus). Of the recorded fasting blood sugars on 3,076 patients, 535 were diabetic. Of the remaining 2,541 nondiabetic patients, 242 had hyperglycemia, i.e., fasting blood sugars above 0.120 per cent. No doubt many of these were cases of true diabetes, but most of the patients were under observation for only two or three days and the opportunity was not given for further study in their cases. Of the 2,541 nondiabetic cases, 218 showed hypoglycemia of varying degrees. Of these, 86 showed unmistakable symptoms of hyperinsulinism and dextrose tolerance tests or repeated fasting blood sugars confirmed the diagnosis. Fifty-eight of the cases of hypoglycemia presented symptoms of hyperinsulinism but were considered borderline cases, while seventy-four patients found to have hypoglycemia in the routine fasting blood sugar examinations had no symptoms of hyperinsulinism. It is probable that some of the latter two groups, if thoroughly studied, would prove to be hyperinsulinism.

Careful history taking, fasting blood sugars, dextrose tolerance tests, and blood sugar studies at the time of many heretofore unexplained nervous attacks, and in periods of unconsciousness with and without convulsions will prove that many of them are due to hyper-

Owing to lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fourth Annual Session of the American Medical Association Milwaukee June 15 1933.

1 Harris Seale (a) The Etiology and Prevention of Diabetes—Hyperinsulinism by Exhausting the Islands of Langerhans May Be a Factor in the Production of Diabetes. Virginia State M. A. October 1923. (b) Virginia M. A. Monthly 50 672 (Jan.) 1924. (c) Hyperinsulinism and Dysinsulinism J. A. M. A. 83 729-733 (Sept. 6) 1924.

2 Harris Seale. Hyperinsulinism. Review of Cases Reported in United States and Canada. Endocrinology 16 29-42 (Jan. Feb.) 1932.

3 Marsh H. E. Hyperinsulinism with Report of Cases. Wisconsin M. J. 30 340-342 (May) 1931.

4 Sigwald Jean. L. Hypoglycémie. Paris. Doin & Cie. 1932.

5 Sippe Clive and Bostock John. Hypoglycemia. A Survey and a Report of Twenty Five Cases. M. J. Australia 1 217-219 (Feb. 18) 1933.

insulinism The physician with laboratory facilities who keeps up with medical literature will find many cases of hyperinsulinism in his regular practice

Since a number of cases of epilepsy and epileptiform attacks have been found to be associated with hyperinsulinism, every patient having petit mal and grand mal attacks should have thorough blood sugar studies made before he is stigmatized with the diagnosis of epilepsy It is believed that many cases now diagnosed as idiopathic epilepsy soon will be classified as belonging to the severe type of hyperinsulinism, in which recurring attacks of unconsciousness and convulsions are symptoms

ETIOLOGY

Since hyperinsulinism and diabetes (hypo-insulinism) are secretory disorders of the pancreas, it seems probable that the same causes may produce the two, and of these a previous, usually unrecognized, pancreatitis is perhaps the most important factor The fact that several patients have been observed who have diabetes and hyperinsulinism (dysinsulinism) indicates that the two have a common origin In one of my cases of subacute pancreatitis there was disturbed carbohydrate metabolism with symptoms of hyperinsulinism

Probably the most important underlying or predisposing cause of the pancreatitis that precedes hyperinsulinism and diabetes is a diet deficient in vitamins About twenty years ago, McCollum, Simmonds⁶ and Parsons expressed the opinion that the role of food in the etiology of many diseases "involves increased susceptibility to infection, due to lowered resistance caused by faulty diet" McCarrison's⁷ classic experiments seem to have proved that foods of low vitamin content predispose to all abdominal infections Other nutritionists, Barnett Sure⁸ in particular, stress the role of diets deficient in vitamins A and B in the etiology of abdominal infections The anatomic and circulatory relations of the pancreas would seem to make it particularly vulnerable to secondary involvement from gallbladder, intestinal and other abdominal infections⁹ If it is accepted as a fact that faulty diets predispose to the infections that play a part in the etiology of pancreatitis, sugar-saturated, vitamin-starved Americans, i e., those who live largely on white flour bread, white potatoes, white rice, lean meats, sugar saturated coffee, and sugar-laden desserts, with candy and soft drinks between meals, would seem to be prone to become victims of pancreatic disorders, including hyperinsulinism and diabetes¹⁰ With a damaged pancreas as a factor, and since the ingestion of carbohydrates stimulates insulinogenesis,¹¹ it seems probable that the excessive use of sugars and starches in the American diet may play another important part as an exciting cause in the incidence of hyperinsulinism

Focal infections from the mouth, tonsils, colon, rectum, prostate and the uterus and its adnexa may be the primary causes of the pancreatitis that precedes hyperinsulinism Likewise the general infections such as typhoid, influenza and the diseases of childhood

particularly mumps, may involve the pancreas as a complication, and the pancreatitis may be unrecognized

In one of my cases of epilepsy associated with hyperinsulinism the first attack occurred about four weeks after an abdominal injury from which the patient was in bed three weeks suffering from abdominal pain and tenderness, nausea and vomiting, symptoms that suggest injury to the pancreas It therefore seems that trauma may be a factor in the etiology of hyperinsulinism

Three diabetic patients with hyperglycemia have given clear histories of previous hypoglycemic symptoms, indicating that the first manifestation of dysfunction of the pancreas was hyperinsulinism, and diabetes was a sequence One of these patients, with a history of hyperinsulinism before she became obese and developed diabetes, has a son who has typical symptoms of mild hyperinsulinism¹² This suggests that the familial tendency exists in hyperinsulinism as in diabetes (hypo-insulinism) Sippe and Bostock express the opinion that "the hypoglycemic entity possesses a definite hereditary tendency"

Worry and other emotional disturbances, and overwork—particularly prolonged physical exertion, thus exhausting the suprarenals, which seem to act conjointly with the islet cells of the pancreas—may play a part in producing excessive and uncontrolled insulinogenesis

A number of the severe cases of hyperinsulinism have been proved to be due to adenomas of the pancreas (insulomas) In other cases, carcinoma of the islands of Langerhans has been found at operation or at necropsy It seems probable that neoplasms of the pancreas may be as important factors in the etiology of hyperinsulinism as adenomas and other tumors of the thyroid are in the pathogenesis of hyperthyroidism

PATHOLOGY

In several cases of hyperinsulinism in which operation has been done, normal appearing pancreases have been found Histologic studies have not revealed any pathologic changes in those cases It therefore seems that, as in diabetes, hyperinsulinism may occur without any demonstrable lesion of the pancreas

Hyperplastic islet cells were found by Phillips¹³ at necropsy on a Negro who died in a hypoglycemic attack Phillips cited the case of Dubreuil and Anderodias¹⁴ of giant islands of Langerhans in a child born of a diabetic mother Phillips also cited a case reported by Gray and Feemster¹⁵ of "compensatory hypertrophy and hyperplasia of the islands of Langerhans in the pancreas of a child born of a diabetic mother" The blood sugar of the child on the day it died was 0.067 per cent It seems probable that at least in the severe cases of hyperinsulinism that have existed for some time there may be hyperplasia of the islet cells, though as in other glandular organs the insulinogenic cells may function excessively without any evident change in the cell structure

The first pathologically proved case of hyperinsulinism was reported by Wilder, Allan and Robertson¹⁶ A

6 McCollum F A The Newer Knowledge of Nutrition New York Macmillan Company 1922 McCollum E A and Simmonds Nina Food Nutrition and Health published by the author

7 McCarrison Robert Faulty Food in Relation to Gastro-Intestinal Disorders J A M A 78 1 (Jan 7) 1922

8 Sure Barnett The Vitamins in Health and Disease Baltimore Williams and Wilkins Company 1933 p 185

9 Harris Seale Pancreatitis as Related to Gastro-Intestinal and Gallbladder Infection with Particular Reference to the Etiology of Diabetes J A M A 62 1496 (Nov 3) 1923

10 Harris Seale Sugar-Saturated Vitamin Starved America Am Med 23 640 (Nov) 1926

11 Johnston H J The Lack of Uniformity in the Insulin Reaction Am J M S 1-2 66 (Jul) 1921

12 Harris Seale South M J 36 250 (June) 1933

13 Phillips A W Hypoglycemia Associated with Hypertrophy of the Islands of Langerhans J A M A 90 1195 (April 11) 1931

14 Dubreuil G and Anderodias Ilets de Langerhans gigantes chez un nouveau ne né de mere glycosurique Compt rend Soc de biol 83 1490 1920

15 Gray S H and Feemster L C Compensatory Hypertrophy and Hyperplasia of the Islands of Langerhans in the Pancreas of a Child Born of a Diabetic Mother Arch Path & Lab Med 1 348 (March) 1926

16 Wilder R M Allan F A Power M H and Robertson H F Carcinoma of the Islands of the Pancreas Hyperinsulinism and Hyperglycemia J A M A 80 148 (July 27) 1927

physician, aged 40, had recurring attacks of unconsciousness and convulsions (blood sugar, 0.030 per cent). Exploratory laparotomy revealed an inoperable carcinoma of the pancreas. The patient died a month later. Necropsy showed a carcinoma of the islands of Langerhans with metastatic nodules in the liver, which showed a distinct resemblance to the islet cells of the pancreas. An extract from the metastatic nodules in the liver injected into rabbits showed insulin activity. The report of this case presents one of the most thorough studies of hyperinsulinism that is recorded in medical literature.

Neoplasms of the islet cells of the pancreas associated with hyperinsulinism have also been studied and reported by Thalheimer and Murphy,¹⁷ McClenahan and Norris,¹⁸ Warren,¹⁹ Howland and Campbell and their associates,²⁰ Graham and Womack,²¹ Smith and Seibel,²² and Bast, Schmidt and Sevringhaus.²³ Smith and Seibel's study of five adenomas found by operations and by autopsy on hypoglycemic patients probably present the most comprehensive report that has been made on the pathology of adenomas found associated with hyperinsulinism.

SYMPTOMS

The Mild Type—In the mild cases of hyperinsulinism the patient complains most frequently of excessive hunger, weakness, nervousness, anxiety or irritability, one or two hours before meals. All these subjective symptoms are relieved by eating, only to recur three or four hours after meals and often during the night. In addition, there may be trembling, flushed face, or pallor, particularly around the lips, profuse perspiration and tachycardia. These symptoms may be exaggerated by exercise, overwork, either mental or physical, worry and other emotional disturbances. Recurring headaches and inability to concentrate the mind on work late in the afternoon have been observed. Fatigability and insomnia are frequent complaints. Vertigo, dyspnea, "smothering spells," cardiac palpitation and precordial

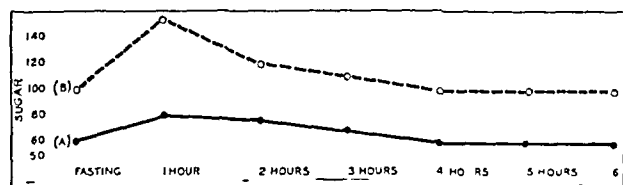


Chart 1 (case 1)—Hyperinsulinism. Complaint hunger and weak spells. A blood sugar curve. May 25 1931 eight years after the diagnosis of hyperinsulinism had been made. B average normal blood sugar curve. The blood sugar levels (hypoglycemia) were almost constant during ten years observation. In the charts the sugar is given in milligrams per hundred cubic centimeters of blood.

pain have been noted and have been relieved by dieting, with frequent feedings between meals.

CASE 1—H J R, a man, aged 52, a mechanic who was 5 feet 10½ inches (180 cm) tall and weighed 139 pounds (63 Kg) minimum, 186 pounds (84.4 Kg) maximum, was

seen, Oct 5, 1923, with the following symptoms: extreme hunger, weakness, nervousness, trembling and profuse perspiration just before the noon and evening meals and at night. The "hunger spells" were relieved by eating. The symptoms were controlled by a low carbohydrate diet and frequent feedings. With lapses in diet the "hunger spells" come on, which are relieved by eating.

In the mild cases the fasting blood sugar usually ranges between 0.075 and 0.060 per cent, and the dextrose tolerance curve is of the low flat type that even in one hour does not go higher than 0.110 per cent and in two or three hours has fallen to 0.060 per cent and in some cases lower. Normal fasting blood sugars have been noted at times with patients who have hypoglycemic symptoms, but at other times the level in the same patients is abnormally low. Therefore, repeated

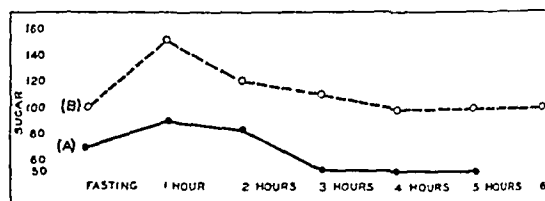


Chart 2 (case 2)—Moderately severe hyperinsulinism following unregulated reduction regimen, psychasthenia or actual psychosis. A low flat blood sugar levels particularly one and two hours after 100 Gm. of dextrose was given. B average normal blood sugar level.

fasting blood sugar tests should be made before the diagnosis of hyperinsulinism is made or is abandoned. In some cases, not all, the patient's hypoglycemic symptoms are reproduced when his blood sugar falls to its lowest level after a dextrose tolerance test.

Mild cases of hyperinsulinism have also been reported by Gibson and Larimer,²⁴ John,²⁵ Liu Shih-Hao and Chang Hsiao-Chien,²⁶ Pribram,²⁷ Hoxie and Lisherness,²⁸ Winans,²⁹ Waters,³⁰ Sexton,³¹ Marsh,³ Sippe and Bostock,⁶ and others. The authors mentioned, in their published reports of their cases, have described many of the symptoms outlined as occurring in the mild types of hyperinsulinism.

Moderately Severe Type—In the moderately severe cases of hyperinsulinism the symptoms outlined as occurring in the mild type may be present in an exaggerated form. The hunger, weakness, nervousness, trembling and sweating are more pronounced, and eating gives relief for only one or two hours when more food is demanded in order that the victim can continue to perform his regular duties. This type appears more frequently in women who complain that they are so weak before breakfast that they cannot do anything. They feel better after breakfast for an hour or two and then become so weak that they have to go to bed, or they learn that they can eat and in a few minutes feel strong enough to go back to work. The vicious circle of getting hungry and weak and eating keeps up until the victim becomes obese. Many of the moder-

17 Thalheimer William and Murphy F D. Carcinoma of the Islands of the Pancreas. Hyperinsulinism and Hypoglycemia. J A M A 91 89 (July 14) 1928.

18 McClenahan W U, and Norris G W. Pancreatic Adenoma with Hypoglycemia. Am J M Sc 177 93 (Jan) 1929.

19 Warren Shields. Adenomas of Islands of Langerhans. Am J Path 2 335 (July) 1926.

20 Howland Goldwin, Campbell W R, Maltby E J, and Robinson W L. Dysinsulinism. Convulsions and Coma Due to Islet Cell Tumor of the Pancreas with Operation and Cure. J A M A 93 674 (Aug 31) 1929.

21 Womack N A, Gnag W B Jr, and Graham E A. Adenoma of the Islands of Langerhans. Successful Operative Removal. J A M A 97 831 836 (Sept 19) 1932.

22 Smith Margaret C, and Seibel M G. Tumors of the Islands of Langerhans and Hypoglycemia. Am J Path 7 723 745 (Nov) 1931.

23 Bast T H, Schmidt E R, and Sevringhaus E L. Pancreatic Tumor with Status Epilepticus. Acta chir Scandinav 71 82 102 1932.

24 Gibson R B and Larimer R N. Hypoglycemic Symptoms Provoked by Repeated Glucose Ingestion in Case of Renal Diabetes. J A M A 82 468 (Feb 9) 1924.

25 John H J. Hyperinsulinism. Ohio State M J 21 99 (Feb) 1925.

26 Shih Hiao Liu and Hsiao Chien Chang. Hypoglycemia. Arch Int Med 36 146 (July) 1925.

27 Pribram Ernst. Chronic Glycopenia. Clinical Picture Analysis of Its Causes and Suggestions for Its Therapy. J A M A 90 2001 (June 23) 1928.

28 Hoxie G H and Lisherness G M. Hypoglycemia. Am J M Sc 173 220 (Feb) 1927.

29 Winans H M. Chronic Hypoglycemia. South M J 23 402 (May) 1930.

30 Waters W C Jr. Spontaneous Hypoglycemia. The Role of Diet in Etiology and Treatment. South M J 24 249 (March) 1931.

31 Sexton D L. South M J 24 251 (March) 1931.

ately severe cases reported have shown overweight, the effort to reduce has exaggerated the symptoms of hyperinsulinism to such an extent that some of the patients had attacks of what has been diagnosed as hysteria of the grave type, and some have been thought to be psychotic

CASE 2—Mrs A E W, aged 43, 5 feet 2 inches (157.5 cm) tall, had reduced from 210 to 133 pounds (from 95 to 60 Kg) in the past year. About two or three hours after meals and during the night she had spells of weakness, nervousness, mental lapses and irritability and was unable to do her housework. She was mentally depressed and had ideas or delusions, of persecution. The question of sending her to a psychopathic hospital was considered. She would feel better and stronger after eating but had been dieting to reduce by not eating supper. Glycosuria was present at times. The patient was very much improved by a low carbohydrate, moderately high fat diet for three meals and orange juice or tomato juice every one or two hours between meals. Her mental and physical condition was much improved.

In some of the moderately severe cases there are brief mental lapses, resembling petit mal attacks. In fact, several cases have been reported in which petit mal attacks had been found associated with hyperinsulinism and in which the attacks were controlled by dieting. In the more severe cases there may be brief periods of actual unconsciousness, and transient hemiplegias may occur.

In the moderately severe type the fasting blood sugar level usually ranges from 0.060 to 0.050 per cent, though in some cases it may be above 0.060 per cent, or fall below 0.050 per cent. The symptoms may or may not be reproduced by a dextrose tolerance test when the blood sugar runs lower than 0.055 per cent.

Moderately severe cases of hyperinsulinism have been reported by many other clinicians whose published articles have described the symptoms mentioned in this article. Among the authors whose contributions have enriched the literature on the symptoms of hyperinsulinism may be mentioned Jonas,³² Sprunt,³³ Gammon and Tenery,³⁴ Heyn,³⁵ Cammidge,³⁶ Sendrail and Planques,³⁷ Stenstrom,³⁸ Rathery and Sigwald,³⁹ Escudero,⁴⁰ Ravid,⁴¹ Shepherdson⁴² and Krause,⁴³ and others, some of whose names have been listed, have reported mild cases.

The Severe Type—The severe cases of hyperinsulinism are manifested by attacks of unconsciousness, either with or without convulsions. In some cases there is associated violent delirium. In one of the cases reported by Wilder⁴⁴ the patient developed violent delirium, disturbances of sleep and somnambulism. He

had to be confined to a straight jacket because of repeated attacks of manic delirium which were provoked whenever his blood sugar level fell below normal." Wilder concludes by saying "It is probable that many of these cases are being dismissed with such diagnoses as hysteria, or epilepsy, or schizophrenia, and that more cases of hyperinsulinism will come to light when blood sugar determinations are made with greater frequency. The nervous manifestations of hyperthyroidism formerly led to this disease being included among the neuroses."

CASE 3—A H B, a man, aged 22, a college student, 5 feet 9½ inches (177 cm) tall, weighing 136 pounds (61.7 Kg), seen, April 25, 1933, had had almost daily attacks of physical and mental exhaustion since November, 1931, when he became very nervous—"frightened and shaky"—an hour or two before meals. He drank four cups of coffee and two glasses of coca cola a day for relief of and to prevent attacks. Frequently he would become so weak that he would have to lie down before his noon meal. He always felt fine after eating. The symptoms grew worse until October, 1932, when he became dizzy and then unconscious for about twenty minutes, there were no convulsions. He had five attacks of unconsciousness after that. The anxious, nervous, weak feelings between meals have continued.

The patient was hospitalized for two weeks on a diet of 60 Gm of carbohydrate, 60 Gm of protein and 150 Gm of fat, with food every one or two hours between meals and when he awoke at night. He has been free from symptoms except that slight weakness occurred one night about 11 o'clock,

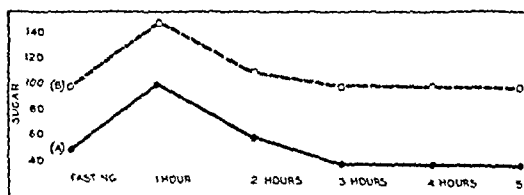


Chart 3 (case 3)—Severe hyperinsulinism recurring attacks of unconsciousness. A hyperinsulinism blood sugar curve. B average normal blood sugar curve. When the blood sugar fell to 0.040 per cent the symptoms of the hunger attacks were reproduced. i. e., the patient became very weak and pale particularly around the lips. He was very nervous and trembled but obtained immediate relief from eating.

but he was relieved immediately by taking orange juice. He has learned to weigh and measure food and calculate his menus to carry out the diet at home. He returned for a check up May 29. He has had no symptoms except one time when he could not get orange juice or other food between meals. He then became weak and trembled but was relieved by eating. The fasting blood sugar was 0.066, compared with 0.05 per cent when the treatment was begun.

In many of the cases of the severe type a diagnosis of epilepsy had been made but abandoned when the attacks of convulsions were found to be associated with hypoglycemia, as in the cases of Neilson and Eggleston.⁴⁵ Several cases of what appeared to be true "idiopathic" epilepsy, in which the patients bit their tongues or received burns and other injuries while unconscious, were found to have been associated with hyperinsulinism.⁴⁶

Serlinghaus, Schmidt and Bast⁴⁷ reported a case of hyperinsulinism with hypoglycemia (blood sugar, 0.040 per cent) in which the patient was in status epilepticus. Removal of a tumor (carcinoma) of the tail of the pancreas relieved the hypoglycemic symptoms.

In a number of the severe cases of hyperinsulinism the patients have appeared as if they were intoxicated

³² Jonas, Leon. Hypoglycemia. *M. Clin. North America* 8: 949 (Nov.) 1924.

³³ Sprunt, T. P. *South. M. J.* 24: 251 (March) 1931.

³⁴ Gammon, C. D. and Tenery, W. C. Hypoglycemia: the Clinical Syndrome, Etiology and Treatment. Report of a Case Due to Hyperinsulinism. *Arch. Int. Med.* 47: 829 (June) 1931.

³⁵ Heyn, I. J. Hyperinsulinism. *J. A. M. A.* 98: 1441 (April 23) 1932.

³⁶ Cammidge, P. J. Hypoglycemia. *Lancet* 2: 127* (Dec. 20) 1924.

³⁷ Spontaneous Hypoglycemia. *Practitioner* 119: 102 (Aug.) 1927. Chronic Hypoglycemia. *Brit. M. J.* 1: 80* 848 (May 3) 1930.

³⁸ Sendrail, M. and Planques, J. The Condition of Hypoglycemia. *Cir. d'hop.* 100: 1105 (Aug. 20) 113* (Aug. 2) 1927.

³⁹ Stenstrom, T. Spontaneous Hypoglycemic Reactions in a Nursing Woman. *Deut. ches. Arch. f. Klin. Med.* 153: 181 1926.

⁴⁰ Rathery, F. and Sigwald, Jean. Spontaneous Hypoglycemia. *I. hypoglycemia* (Sigwald) *Laris. Donn. & Cie.* 1932 p. 14.

⁴¹ Escudero, cited by Sigwald. *I. hypoglycemia* p. 143.

⁴² Ravid, J. M. Transient Insulin Hypoglycemic Hemiplegia. *Am. J. M. Sc.* 117: 556 (June) 1928.

⁴³ Shepherdson, H. C. The Effects of High Fat Diets in the Treatment of Chronic Hypoglycemia. *Endocrinology* 52: 182 (March April) 1931.

⁴⁴ Krause, F. (Dusseldorf). Hyperinsulinism with Seizure Complex of Hypoglycemia. *Klin. Wchn. fr. B.* 2346 (Dec. 13) 1930.

⁴⁵ Wilder, R. M. Progress in Study of Internal Secretion. *Internat. C. n.* 1: 93 (March) 1930.

⁴⁶ Neilson, J. M. and Eggleston, F. L. Functional Dr. insulinism with Epileptiform Seizures. *Treatment J. A. M. A.* 91: 260 (March 22) 1930.

⁴⁷ Harris, Seale. Epilepsy and Narcolepsy Associated with Hyperinsulinism. *J. A. M. A.* 100: 321 328 (Feb. 4) 1933.

from alcohol but would become normal after taking food. Some have complained of "crazy spells," and actual psychotic symptoms have been observed by several clinicians. In one of Graham's⁴⁷ cases the psychosis was relieved by the removal of two small adenomas which appeared to be the cause of the hyperinsulinism.

Abdominal pain has been pronounced in several reported cases. The pain of severe hyperinsulinism has simulated appendicitis, gallbladder infection and duodenal ulcer, so that exploratory operations, with removal of the appendix and gallbladder and gastroenterostomies, have been performed without relieving the abdominal pain. The pain of hyperinsulinism usually is exaggerated during the attacks, though it may be present more or less constantly. In some cases it is more marked one or two hours after meals. The pain usually is in the upper part of the abdomen, sometimes radiating to the left. Tenderness over the pancreas may be elicited on deep pressure in some cases. It is probable that pain and tenderness over the upper part of the abdomen in hyperinsulinism occurs most frequently in cases in which there are adenomas or other tumors of the pancreas, but in a narcoleptic patient in whom abdominal pain was a prominent symptom, no pathologic changes of the pancreas were found at operation, which relieved not only the hypoglycemia but also the pain.⁴⁶ This patient, in addition to the abdominal pain, had the typical Gelineau⁴⁸ syndrome of narcolepsy, i. e., attacks of unconsciousness associated with cataplexy.

In severe cases of hyperinsulinism there is usually a history of mild symptoms for several years before the attacks of unconsciousness and convulsions supervened. In other words, in the severe cases of hyperinsulinism the symptoms may progress from those ordinarily observed in the reaction following an overdose of insulin to the symptoms observed in the moderately severe cases and then into the unconscious or convulsive period. Usually there are mild symptoms and often petit mal attacks between the attacks of unconsciousness and convulsions in the severe type.

Some of the most severe cases of hyperinsulinism appear to be of the acute fulminating type in which the patient goes into hypoglycemic coma and remains unconscious for hours before death occurs. In other patients spontaneous recovery occurs after he has been unconscious for hours. In the severe cases of the epileptiform type, the patient may go for weeks or months without seizures and then have several grand mal attacks in a few hours. In most of the severe cases of hyperinsulinism reported there has been the tendency for the hypoglycemic attacks to become more frequent and progressively more serious unless relieved by dietary management or by surgery. As in the mild and moderately severe types of hyperinsulinism, in the severe cases the hypoglycemic attacks may be induced by mental or physical strain, worry, grief and other emotional disturbances.

The blood sugar levels in the severe type of hypoglycemia usually are very low, below 0.050 per cent. Readings of 0.040, 0.035 and 0.027 per cent have been found, in Weil's⁴⁹ case the blood sugar fell to zero.

Woodyatt⁵⁰ and Millard Smith⁵¹ have reported zero levels in hypoglycemia from overdoses of insulin, but both patients recovered after sugar administration. In two of Neilson and Eggleston's⁴⁶ cases of "epileptiform convulsions" the fasting blood sugar level was not very low, only 0.069 and 0.064 per cent. The dextrose tolerance test usually brings out much lower blood sugar levels than are found in the same patient when fasting blood sugars have been made. In several instances the convulsions and mental and nervous symptoms have been induced when the blood sugar fell very low from four to six hours after the 100 Gm of dextrose was given. In one of my epileptic patients, a woman who had grand mal attacks during menstruation, in a dextrose tolerance test between catamenial periods the lowest blood sugar level was 0.060 per cent. She became weak and had to go to bed but had no convulsions. In the dextrose tolerance test made during menstruation, when a seizure was expected the blood sugar level went to 0.050 per cent, at which time she had a typical epileptic convulsion.

The severe cases of hyperinsulinism that have been reported have attracted more attention than have the milder types, perhaps for the reason that the symptoms have been serious and usually clear cut, and the results of medical and surgical treatment have been dramatic. Pathologic studies from specimens removed by operation, or at autopsy, have been productive of proof that hyperinsulinism is a definite disease entity due in many cases to neoplasms. Among those who have made important contributions to the study of the severe type of hyperinsulinism, associated with attacks of unconsciousness, with or without convulsions, may be mentioned Wilder and his associates,¹⁰ Allan,¹¹ Thalheimer and Murphy,¹² the Finneys,⁵² Hartman,⁵³ Howland Campbell, Maltby and Robinson,²⁰ Neilson and Eggleston,⁴⁶ Carr, Parker, Grave, Fisher and Larrimore,⁵⁴ Schmidt and Carey,⁵⁶ Phillips,⁵¹ Weil,⁴⁹ McGavern,⁵⁷ Womack, Gnani and Graham,²¹ Sevringhaus, Schmidt and Bast,⁷³ Holman,⁵⁸ Guy-Larache, Lelourdy and Bussiere,⁵⁹ Stenstrom,³⁸ Pettersson,⁶⁰ Krause,⁴³ and Sippe and Bostock.

DISSINSULINISM

The uncontrolled secretion of insulin, excessive at times and resulting in hypoglycemia, which may alternate with or be followed by hypofunction of the islet cells with hyperglycemia, is manifested by inconstant symptoms of both hyperinsulinism and diabetes mellitus (hypo-insulinism). In some cases the hypoglycemic symptoms predominate and in others hyperglycemic phenomena are more pronounced. The symptoms of dysinsulinism may be mild and irregular, moderately

47. Graham E. A. and Womack N. A. The Application of Surgery to the Hypoglycemic State Due to Islet Tumors of the Pancreas. *Surg. Gynec. & Obst.* 56: 728-742 (April) 1933.
48. Gelineau. De la narcolepsie. *Gaz. d. hop.* 53: 626-1880.
49. Weil. Clarence. Functional Hyperinsulinism—Epileptiform Convulsions Accompanying Spontaneous Hypoglycemia. *Internat. Clin.* 4: 33 (Oct.) 1932.

50. Woodyatt R. T. J. *Metabol. Research* 2: 793 (Nov. Dec.) 1927.
51. Smith Millard. Treatment of Diabetes Mellitus. Philadelphia Lea & Febiger 1928. p. 45.
52. Allan F. N. Carcinoma of the Islands of Langerhans with Hyperinsulinism. *Proc. Staff Meet. Mayo Clin.* 2: 89 (April 27) 1927. *Hyperinsulinism* *ibid.* 3: 367 (Dec. 19) 1928. *Hyperinsulinism* *Arch. Int. Med.* 44: 65 (July) 1929.
53. Finney J. M. T. and Finney J. M. T. Jr. Resection of the Pancreas. *Ann. Surg.* 88: 584 (Sept.) 1928.
54. Hartman F. L. Hypoglycemia. *M. Clin. North America* 12: 1035 (Jan.) 1929.
55. Carr A. D., Parker Robert, Grave Edward, Fisher A. D. and Larrimore J. W. Hyperinsulinism from B Cell Adenoma of the Pancreas. Operation and Cure. *J. A. M. A.* 96: 1363 (April 25) 1931.
56. Schmidt E. G. and Carey T. N. Terminal Hypoglycemia. *Arch. Int. Med.* 47: 128 (Jan.) 1931.
57. McGavern B. E. Epileptoid Attacks and Hyperinsulinism. *Endocrinology* 16: 293 (May June) 1932.
58. Holman Emile. Partial Pancreatectomy in Chronic Spontaneous Hypoglycemia. *Surg. Gynec. & Obst.* 56: 591-600 (March) 1933.
59. Guy-Larache Lelourdy and Bussiere cited by Sigwald. *L. hypoglycemia* pp. 140-141.
60. Pettersson A. S. A Case of Spontaneous Hypoglycemic Coma. *Acta med. Scandinav.* 69: 232 1928.

severe and bizarre, or so severe that attacks of unconsciousness and convulsions and hypoglycemic coma and death may occur in patients known to have diabetes.

Symptoms of dysinsulinism may be brought out in dieting diabetic patients, particularly in the mild overweight cases, but severe diabetes may coexist with severe hyperinsulinism. In such cases the hypoglycemic symptoms usually present the more serious problem.

My first case diagnosed as dysinsulinism was in January, 1924.¹⁰ An obese woman who a year before, when she weighed 210 pounds (95 Kg.) had had glycosuria, was sent to me as a diabetic patient. She had reduced, by dieting, to 160 pounds (72.6 Kg.), and complained of having "spells of weakness and nervousness" at about 1 or 2 o'clock in the morning. She had found from experience that eating would relieve the symptoms, so that she kept an orange or a glass of milk on the table by her bed. Her blood sugar during an attack was 0.047 per cent. She was relieved promptly by frequent feedings of a low carbohydrate diet, consisting largely of the 5 and 10 per cent vegetables and fruits, with sufficient proteins and fats. Since then I have had three other cases of dysinsulinism.

CASE 4—C. H. M., a man, aged 41, a laundry manager, 5 feet 5 inches (165 cm.) tall, weighing 127 pounds (57.6 Kg.), seen Nov. 16, 1930, complained of polyuria, glycosuria, and a nervous, weak feeling in the middle of the morning and afternoon, which was relieved by taking food. The fasting blood sugar was 0.060 per cent. Glycosuria was present constantly for two years, 4 Gm. being excreted in twenty-four hours. The hypoglycemic symptoms were relieved on a weighed and measured diet of 120 Gm. of carbohydrate, 60 Gm. of protein and 180 Gm. of fat, with food every two hours, but the glycosuria persists. The patient increased his weight 12 pounds (5.4 Kg.). The fasting blood sugar, Oct. 16, 1932, was 0.085 per cent.

In the last few years, several similar cases have been reported and the low blood sugars have been attributed to hypersecretion of insulin by Jonas,²² John,²³ Harrop,²² Neilson and Eggleston,²⁴ Howland and Campbell and their associates²⁵ and Weil.²⁶

DIAGNOSIS

A tentative diagnosis may be made from the symptoms, i. e., hunger, weakness, nervousness and the like (insulin reaction) in mild cases, and recurring attacks of mental lapses, convulsions, unconsciousness and coma in the severe cases. If the patient is relieved by reducing the carbohydrates and increasing the fats in his diet, with frequent feedings, the diagnosis of hyperinsulinism may be assumed. A positive diagnosis can be made only from repeated fasting blood sugar studies and carbohydrate tolerance tests showing hypoglycemia, i. e., blood sugar concentration below 70 mg. per hundred cubic centimeters and by excluding all other causes of hypoglycemia except the excessive secretion of insulin by the islet cells of the pancreas.

The patient receiving a dextrose tolerance test should be observed very carefully to determine his reaction to the low blood sugar levels in from three to five hours after the ingestion of the 100 Gm. of dextrose. In some such cases the symptoms of which the patient complains are reproduced. In one of the epileptic patients a typical grand mal seizure occurred while the patient was undergoing a dextrose tolerance test when the blood sugar level fell to 0.050 per cent. Lennox and Cobb²⁷ in two out of seven times produced grand

mal attacks in an epileptic patient by giving him insulin. In one of the seven times he was mentally confused but had no convulsion when the blood sugar level was 0.025 per cent. At other times the patient had epileptic attacks when his blood sugar was normal. Gammon and Tenery²⁸ reproduced the symptoms of hypoglycemia in their case of hyperinsulinism by giving the patient 10 units of insulin. It is hardly necessary to give insulin as a diagnostic procedure in hyperinsulinism because the blood sugar levels after a dextrose tolerance test usually are sufficiently low to give the patient mild hypoglycemic symptoms.

Every possible cause of hypoglycemia besides pancreatic disease should be considered including studies of all the other organs of internal secretion, excluding them as factors if possible before making the diagnosis of hyperinsulinism in an epileptic or narcoleptic patient.

Since hyperinsulinism has been manifested by symptoms of hysteria of a psychoneuroasthenia, neurocirculatory asthenia, psychoses, brain tumors, epilepsy, narcolepsy, status epilepticus, epileptiform convulsions, appendicitis, gallbladder infection, duodenal ulcer and other diseases, a differential diagnosis from those conditions can be made by blood sugar studies. Hyperinsulinism is invariably associated with hypoglycemia. It should be remembered however, that, in patients who have hypoglycemic symptoms, fasting blood sugars are not always low. Therefore, repeated and varied

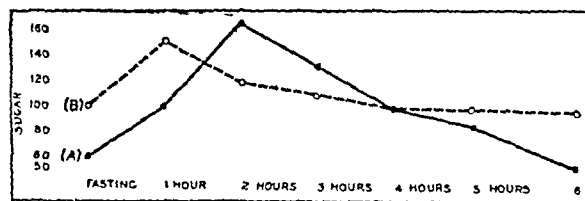


Chart 4 (case 4)—Dysinsulinism, mild diabetes and hypoglycemic symptoms. A, low fasting blood sugar rising slowly above normal with slow drop to subnormal level. B, average blood sugar curve.

blood sugar studies should be made before hypoglycemia is excluded in suspected cases of hyperinsulinism. It should be remembered also that the patient with hyperinsulinism may have other diseases that may or may not affect the hypoglycemic symptoms. Thus, two cases of hyperinsulinism in syphilitic patients have been observed in which antisyphilitic treatment did not affect the blood sugar levels or the symptoms of hypoglycemia.

Cases of marked degrees of hypoglycemia due to organic diseases or functional disturbances of other organs besides the pancreas, have been reported as having been due to (a) deficient glycogenesis in the liver, from poisons such as arsphenamine or other arsenicals, phenylhydrazine, phosphorus or other hepatotoxins (Cross and Blackford²⁹), and from massive tumor of the liver (Nadler and Wolfer³⁰); (b) inadequate mobilization of glycogen due to deficient secretion of the suprarenals as in the case reported by Anderson³¹ in which the autopsy revealed an adenoma of the left suprarenal gland and in Addison's disease (Wadsworth³²); (c) pituitary dysfunction (Cushing³³, Josef³⁴).

²⁹ Cross, J. B. and Blackford, I. M. Fatal Hepatogenic Hypoglycemia Following Nevarphenamine. *J. A. M. A.* 94: 1734-1743 (May 31), 1930.

³⁰ Nadler, W. H. and Wolfer, J. A. Hepatogenic Hypoglycemia Associated with Primary Liver Cell Carcinoma. *Arch. Int. Med.* 14: 709 (Nov.) 1929.

³¹ Anderson, H. B. A Tumor of the Adrenal Gland with Fatal Hypoglycemia. *Am. J. M. Sc.* 150: 71 (July), 1930.

³² Wadsworth, W. Leber Hypoglykämie bei Miliärischer Addison'scher Krankheit. *M. W. Arch.* 210: (Oct. 24) 1928, cited by Cross and Blackford.

³³ Cushing, Harvey. *The Pituitary Body and Its Disorders*. Philadelphia: J. B. Lippincott Company, 1932.

Wilder⁶⁹), (d) thyroid dysfunction, a possible factor in the etiology of hypoglycemic convulsions (Zubiran⁷⁰), and (e) ovarian dysfunction, as in the case of hyperinsulinism of Weil,⁴⁹ in which a woman with very low blood sugar levels constantly and frequently had the symptoms of an insulin reaction between her catamenial periods, but had convulsions only just before and during menstruation

PROGNOSIS

The prognosis of hyperinsulinism depends on the degree and character of the associated pancreatic lesion. It is good in the functional cases when an intelligent patient will carry out dietary instructions.

On account of the bulimia and the polyphagia that is pathognomonic of hyperinsulinism, obesity often results. Prolonged overfunction, with exhaustion, of the islet cells may be followed by hypo-insulinism (diabetes mellitus). Clinical evidences suggest that the patient with hyperinsulinism is a potential diabetic patient. I have had three diabetic patients with histories of unmistakable symptoms of hyperinsulinism before the symptoms of diabetes were observed. Therefore, early diagnosis and early dietary management may prevent the patient with mild or moderately severe hyperinsulinism from becoming diabetic, the clinician may thus aid in combating the increasing death rate from diabetes.⁷¹

Spontaneous recovery from the attacks of convulsions and unconsciousness due to hyperinsulinism usually takes place, but a number of deaths have been reported from hypoglycemic coma, in some of which unsuspected adenomas of the pancreas have been found at autopsy.

In the severe cases that cannot be controlled by dieting, the hope of cure is offered by surgery, i.e., partial resection of the pancreas, or removal of insulinoma. Early diagnosis is important in neoplasms of the pancreas, because delayed surgery may result in the condition becoming inoperable.

TREATMENT

The problem of dieting in hyperinsulinism is much the same as in diabetes mellitus (hypo-insulinism) in that each patient has to be dieted to suit his particular needs. It is necessary to arrange a diet that will nourish the patient properly, providing sufficient amounts of carbohydrates, proteins and fats, with due consideration to its vitamin content. As far as the quantity is concerned, it should have a lower carbohydrate content than in diabetes, with sufficient calories from fats to maintain normal body weight and physical vigor. The protein content depends on the age and weight of the individual from 60 to 75 Gm for an adult weighing 70 Kg (154 pounds).

The adult patient of average height and weight with hyperinsulinism should have about 2,250 calories, from 90 to 120 Gm of carbohydrates, from 60 to 75 Gm of proteins and the remainder in fats (cream and butter), divided into from five to seven feedings a day.

In the underweight, asthenic patient with hyperinsulinism, a high fat diet of 90 Gm of carbohydrate, from 200 to 300 Gm of fat, and from 60 to 75 Gm of protein, divided into five or six feedings a day, will keep the blood sugar at a sufficiently high level to pre-

vent hypoglycemic symptoms and will build up the patient's general health and state of nutrition.

Careful blood sugar studies should be made on each patient for a few days after being placed on a diet for hyperinsulinism, during which time his food should be weighed and measured. It is just as necessary to teach the patient with hyperinsulinism food values and to calculate and arrange the menus suited to his particular case, as it is to teach "diabetic arithmetic" to patients with hypo-insulinism (diabetes mellitus).

Highland Avenue at Sycamore Street

ABSTRACT OF DISCUSSION

DR. RUSSELL M. WILDER, Rochester, Minn. This subject has interested me greatly since I had the opportunity, with Allan, Power and Robertson, to study the case of island carcinoma to which Dr. Harris has referred. The existence of a state of hyperinsulinism was definitely proved in that case by obtaining insulin-like extracts from the hepatic metastases of the tumor. The report of this observation has been followed by a number of other reports of similar cases. In some of these, island tumors have been found and the resection of them has resulted in the complete relief of the syndrome of hypoglycemia. In others, no tumors were discovered. Reviewing the subject recently (*Internat Clin* 2:1 [June] 1933) I was able to cite sixteen cases presenting tumors of the islets of Langerhans. Fourteen had been associated with symptoms of hypoglycemia; nine were diagnosed clinically and treated surgically. Multiple tumors were present in a case reported by Franck, in one reported by Smith and Seibel, and in one of the cases at the Mayo Clinic. In five additional cases of hypoglycemia, hypertrophy of the islets had been noted, but such hypertrophy is frequently seen when there is no evidence of excessive insulin production. In seven other cases of hypoglycemia, two examined at autopsy and five at surgical operations, the pancreas appeared to be normal. Information is thus available concerning twenty-nine cases of this hypoglycemia syndrome in which the opportunity has been given to examine the pancreas. Tumors were noted in only fifteen of them. The clinical differentiation between cases with and those without tumor has been for us impossible. The severity of the symptoms has been great in both groups of cases. The dextrose tolerance test has not been helpful. Extreme degrees of variation in the height of the blood sugar curve and in the rapidity and degree of its descent have been seen in both groups of cases. Dr. Harris suggests that patients with hyperinsulinism may be potentially diabetic and that diabetes may follow a period of hyperinsulinism. We have seen the reverse of this in two cases—diabetes first and hypoglycemia later. I am not entirely prepared to accept the idea of a faulty pancreas in those cases of hypoglycemia which present no neoplasm. It is true that typical diabetes mellitus is not infrequently seen with no morphologic abnormality of the pancreas. By analogy, hyperfunction of the islets of Langerhans might be expected even in the absence of their anatomic alteration. However, hyperglycemia as contrasted to true diabetes mellitus, can be produced by a variety of disturbances without any evident involvement of the pancreas, and similarly hypoglycemia may be brought about by a variety of causes. Dr. Harris in 1923 happily suggested the possibility of the clinical state of hyperinsulinism, but the diagnosis of his early cases, those on which he based his suggestion, was substantiated only by the fact that the blood sugar was low and that food gave relief. There was no proof of an excess of insulin. Cammidge, observing similar cases about the same time, inferred with equal reasonableness that the liver was responsible. The organ chiefly concerned with the regulation of the blood sugar is the liver, and the secretion of the pancreas is only one of various factors that influence its ability to handle sugar. Recent observations indicate that similar quanta of insulin have different effects under differing conditions. I refer particularly to the extreme insulin sensitiveness of hypophysectomized animals (Barnes). Similar insulin sensitiveness has been produced experimentally by thyroidectomy, by denervation of the suprarenal capsules and by splanchne-

69 Wilder, Josef. A New Hypophysis Disease Picture. *Hypophyseal Spontaneous Hypoglycemia*. *Deutsche Ztschr f Nervenh* 112: 192-250 1930

70 Zubiran, S. A Case of Hypoglycemia. *Medicina Mexico* 9: 306 310 (April) 1929

71 Harris, Seale. Combating the Increasing Death Rate from Diabetes. *Mississippi Doctor* 20: 24 (March) 1933

tony (de Takats) Our knowledge, then, is still too fragmentary to accept the assumption of an excessive insulin production merely on the basis of hypoglycemia. Particularly is this true in the rather numerous cases presenting milder degrees of what Dr Harris calls hyperinsulinism. A pertinent discussion of this matter appears from the pen of the editor of the May issue of the *Annals of Internal Medicine*. The present evidence, as stated in this editorial, seems to indicate that tumor of the islets is among the rarest causes of hypoglycemia, and for the present it would seem more in accordance with our actual lack of knowledge to designate all cases of hypoglycemia in which no definite proof of cause exists as spontaneous or idiopathic hypoglycemia rather than as hyperinsulinism.

DR HENRY J JOHN, Cleveland While hypoglycemia with its classic symptomatology, is the outstanding manifestation of hyperinsulinism, many persons in perfect health have marked hypoglycemia and no symptoms. Hyperinsulinism is not merely hypoglycemia. I feel, as Dr Wilder does, that there is some other factor of importance. There are two types of hyperinsulinism, the exogenous and the endogenous. Years ago I published reports of two cases presenting the exogenous type of hyperinsulinism. Both patients had glycosuria and hyperthyroidism, but neither of them had diabetes. Their treatment at home had consisted of large doses of insulin, which had produced the classic hypoglycemic symptoms. In endogenous hyperinsulinism there is hyperfunction of the islets themselves or else an adenoma which either secretes too much insulin or stimulates the islets to secrete an excess of insulin. The treatment for hyperinsulinism has progressed through various phases. The first and most obvious method of relief was learned from the patients themselves. Even before the condition was known as an entity, the patients had learned that the ingestion of carbohydrates relieved them. When hyperinsulinism was definitely recognized as such, the problem presented was just the opposite of that encountered in diabetes and so frequent carbohydrate feedings and an extra feeding at bedtime were administered to these patients. It was not the ideal treatment, because the excessive carbohydrate was continually stimulating the pancreas to produce more and more insulin the very condition that the treatment was supposed to combat. The next step was to modify the diet, giving the patient less carbohydrate and more fat in order to retard absorption of the carbohydrate and the resultant hyperglycemia and thus to eliminate the acute stimulation of insulin production and hypoglycemia. A third method of treatment was surgical removal of a portion of the pancreas, in order to reduce the number of secreting islets in an effort to decrease the excessive production of insulin. Another step in the treatment of hyperinsulinism is the administration of insulin, which I have tried recently with exceptionally good results in one case. The rationale for this method of treatment is briefly as follows. The ingestion of food produces hyperglycemia which in turn stimulates the insulogenic apparatus to insulin secretion, and this is followed by a drop in the level of blood sugar. In normal persons the intake of dextrose and the secretion of insulin are nicely balanced but in patients with diabetes or with hyperinsulinism there is some defect in the mechanism in one or the other direction.

DR GLA DE TAKATS Chicago During the past few years an attempt has been made to produce an increased secretion of insulin in the dog by producing a hypertrophy and hyperplasia of the islet tissue. This was found to be possible in the animal and to a certain extent also in the human juvenile diabetic patient. One may find however in the cases of hyperinsulinism not only an excessive insulin secretion but also an increased sensitivity to insulin. Tests for insulin susceptibility have not been determined frequently enough in patients with diabetes but on the basis of a few well observed cases it can be said that there is a wide variation in the individual with diabetes and also in the so-called normal individual as to susceptibility to insulin. It is quite possible then, that some of these patients with spontaneous hypoglycemia do not actually secrete an excessive amount of insulin but they become because of nervous or glandular mechanisms temporarily sensitive to insulin. Thus it is known that epinephrine insufficiency and pituitary insufficiency will produce a hypersensitivity to insulin. Sympathetic action in diabetic patients also increases insulin sensitivity. From the surgical standpoint the attack on the

pancreas is not any more dangerous than any upper abdominal operation on the well controlled patient. I should like to emphasize, contrary to the usual opinion, that the danger of pancreatic necrosis is very slight. Pancreatic secretion is inactive in the pancreas and an aseptic operation will not activate the pancreatic ferments. As a matter of fact the cases reported in which the adenoma of the pancreas has been removed show that there was not one single instance of post-operative pancreatic necrosis.

DR SEALE HARRIS, Birmingham Ala I am sorry that I didn't have the time to discuss the diagnosis of hyperinsulinism in the fifteen minutes allowed for presenting a paper. In my paper I stress the fact that a positive diagnosis of hyperinsulinism can be made only from repeated fasting blood sugar studies and carbohydrate tolerance tests showing hypoglycemia, namely, a blood sugar concentration below 70, and by excluding all other causes of hypoglycemia except the excessive secretion of insulin by the islet cells of the pancreas. It is not possible at times to exclude all the other causes of hypoglycemia except hyperinsulinism, any more than can be done in making a diagnosis of diabetes from hyperglycemia and glycosuria. It seems likely that there are many mild cases of hyperinsulinism just as there are mild cases of diabetes, and I think that hyperinsulinism occurs perhaps as frequently as hypoinsulinism (diabetes mellitus), the opposite secretory disturbance of the islet cells of the pancreas. Hypoglycemia may be due to deficient glycogenesis. A number of cases of hypoglycemia have been reported as resulting from massive tumor of the liver. Inadequate mobilization of glycogen due to deficient secretion of the suprarenals is also a cause of hypoglycemia, as in the case reported by Anderson, in which there was marked hypoglycemia and the autopsy revealed an adenoma of the left suprarenal gland. Hypoglycemia may be due to thyroid dysfunction, and to hypophyseal dysfunction, as Cushing has pointed out. There are other causes of hypoglycemia. The important thing in making a diagnosis of hyperinsulinism is to study the cases carefully and to come to an accurate diagnosis from repeated blood sugar studies, excluding all other causes of hypoglycemia except the excessive secretion of insulin by the islet cells of the pancreas. One can guess pretty definitely in the mild cases of hyperinsulinism from such clinical symptoms as hunger, weakness, nervousness and distress three or four hours after eating which are relieved by taking food, that one is dealing with hypoglycemia and a very large proportion of such cases are due to an excessive secretion of insulin by the islet cells. Of course, one should not stop at symptoms but should study the cases carefully, making blood sugar studies and eliminating all other factors in hypoglycemia, except the excessive secretion of the islet cells of the pancreas, before a positive diagnosis of hyperinsulinism is made.

Coughs—I would particularly ask your attention to coughs—

There is the revolting hawking morning pharyngeal cough of chronic pharyngitis best manifest in the alcoholic. There are the annoying habit coughs of children which cause no harm excepting to the inexperienced mother the painful voiceless coughs of grave laryngeal disease the brassy cough of thoracic aneurysm and the phthisical cough which I find difficult to describe although it has quite definite features of its own. It is not so effortful but in late cases, as productive as the bronchitic cough, being less tenacious the sputum is more easily ejected the cough is moister and unattended by rhonchus in the very advanced case it may have a hollow weary quality. We have also the unmistakable paroxysm of whooping cough with its repeated expiratory efforts usually (but not always) culminating in the final inspiratory stridor. How often I have pricked up my ears during a ward round and caught the eye of my house physician in relation to his latest unsuspected admission as bronchitis to one of the cots. I used the adjective unmistakable in connection with the cough of pertussis but it is worth remembering that a foreign body in the bronchus or a small undischarged pulmonary abscess may give rise to severe and prolonged paroxysms of coughing which are not very dissimilar—Rule 1. The Training and Use of the Senses in Clinical Work. *Guys Hosp Gaz* 47 421 (Oct. 28) 1933.

Clinical Notes, Suggestions and New Instruments

URTICARIA OF SEVENTEEN YEARS DURATION REPORT OF CASE TREATED SUCCESSFULLY

JOHN L. EMMETT, M.D. AND ARCH H. LOGAN, M.D. ROCHESTER, MINN.

Urticaria is often one of the most discouraging problems the physician is called on to treat. Although definitely associated with the great allergic triad hay fever, eczema and urticaria, it often defies all attempts to identify the sensitizing factor. Such diagnoses as physical allergy and allergy produced by products of metabolism are often resorted to. The case here presented is one that had defeated all attempts to identify the exciting cause and had finally been considered a case of physical allergy with a large nervous element.

REPORT OF CASE

A white woman, aged 30, single, entered the Mayo Clinic, Aug. 29, 1932, complaining of a heat rash that had been present since puberty. The rash was brought on by any exertion and also by wind and cold weather. The disability became so great that the patient had been forced to abstain from activities enjoyed by normal girls; she could not attend dances, could not swim, could barely walk enough to attend school. The rash would be brought on several times daily and could be made to disappear only by the patient sitting perfectly still for from forty-five minutes to three hours. It was present the year round but was more severe in winter. The eruption consisted, in its mild phase, of a scarlet flush, soon followed by a red, diffuse, papular eruption. It usually was confined to the neck, face and arms, and it itched and burned excessively. If the patient did not become quiet immediately the condition became worse, more of the body became involved. Large typical, urticarial wheals appeared, the hands and wrists became swollen often enough to prevent closing the fists, the lips became swollen, and edema of the larynx would often produce some wheezing and a choking sensation. At this stage moderate dermatographia could be elicited. The disability coming as it did in adolescence and young adult life, caused the patient to become very self-conscious and easily embarrassed when in the company of others and embarrassment often would excite an eruption. The patient's father was a physician and many treatments had been tried and many attempts made to determine the exciting factor, but without success. Skin tests had all been negative. Elimination diets to seek out offending foods disclosed none to be the cause. Basal metabolic rates had been normal. Examination for foci of infection had all been negative. Many drugs had been tried without success. A few months previous to her admission at the clinic she had been given some Soricin (sodium ricinoleate) 5 grains (0.3 Gm.) three times a day, as advocated recently by Morris and Dorst,¹ to overcome bacterial sensitivity of the intestinal tract. For two or three weeks this treatment had seemed to help some but it soon failed to give any relief. The patient's father had been subject to hay fever, but other than this the family history was negative.

At examination the young woman was found to be rather obese. Over the neck and face there was a mild papular eruption that had appeared after a short walk to the clinic. Two teeth were dead, although there was no evidence of periapical infection. The tonsils had been removed but there was a small tonsillar tag on the left. Urinalysis, blood counts and differential blood counts all gave normal results. The serologic test for syphilis, performed on the blood, was negative. The basal

metabolic rate was —8 per cent. Blood pressure and pulse rates were normal. Puberty had occurred at the age of 13 years. Menstruation had occurred every four to six weeks, except for the two years just preceding her visit to the clinic, when flow had become regular at thirty-three days but was rather scant. She had had considerable dysmenorrhea since puberty. Skin tests with a wide variety of substances all gave negative results. Attempts to produce urticarial wheals by means of physical agents such as heat, cold and light resulted in a small wheal being produced with ice. None of the other agents caused any reaction.

Because of the fact that Soricin had seemed to give slight, temporary relief, and in spite of the fact that the patient had never had any intestinal symptoms (not even mild constipation), a culture was made of her stool and the predominating organisms were isolated. The standard bacteriologic procedure was employed, fishing the colonies from poured blood agar plates, and subsequently growing them as pure cultures in brain broth. Killed suspensions of the organisms, made up to a concentration of 500,000,000 in each cubic centimeter, were used for skin tests. Four organisms were isolated: streptococci that caused slight hemolysis, green-producing streptococci, *Escherichia coli* that was indifferent on blood agar, and *Escherichia coli* that was hemolytic.

Skin tests made on the volar surface of the left forearm with killed suspensions of these organisms resulted in no reaction from the streptococci but reaction graded 3 at the site of injection of both suspensions of *Escherichia coli*. The reactions consisted of large urticarial wheals surrounded by larger areas of erythema. There was no reaction at the site of the control injection of physiologic sodium chloride solution. A vaccine was made of equal parts of the two suspensions of *Escherichia coli*.

During the time required to produce the vaccine, the patient was given five subcutaneous injections daily of 0.1 mg. of histamine in an effort to determine whether desensitization by histamine could be produced as Horton and Brown² had produced it in their work with cold allergy. This did not relieve the symptoms and was discontinued.

The patient was dismissed from the clinic September 15, to begin the treatment by vaccine at home. She was instructed to begin with 0.1 cc. taken subcutaneously twice weekly, increasing the dose by 0.1 cc. each time unless a local reaction occurred. If such reaction did occur, the dose was to be dropped and gradually increased again. A dose of 1 cc. was to be the maximum. The patient found that she never could exceed a dose of 0.6 cc. as a larger dose produced a large area of redness and swelling at the site of injection.

Within three weeks after she began the treatment with vaccine the patient's condition was markedly improved, and by the end of six weeks the urticaria had completely disappeared. She could walk and exercise with impunity for the first time since she had reached the age of 13 years. She gradually assumed the routine of taking 0.6 cc. of vaccine once weekly. About the last day of the week if she exerted herself, she would notice a little blush on her neck suggestive of the old eruption but it would leave immediately when she rested, and injection of the vaccine the next day would keep her completely relieved for the next six or seven days. In June, 1933, she was advised to discontinue taking the vaccine. She did this for two weeks, but the eruption began to return and she resumed the treatment. At present she is still taking the vaccine once weekly, with complete relief of symptoms, which makes almost one year of complete relief since the treatment was begun.

COMMENT

No attempt will be made here to explain this result. It will be interesting to trace the patient and see whether the relief is permanent as it bids fair to be after a year of relief. At any rate, the treatment involves practically no risk, is not expensive, and may well be tried in stubborn cases, when the exciting factor seems obscure.

From the Mayo Clinic. Dr. Emmett is a Fellow in Surgery of the Mayo Foundation and Dr. Logan is connected with the Division of Medicine of the Mayo Clinic.

1. Morris R. S. and Dorst S. E. The Use of Sodium Ricinoleate in Bacterial Hypersensitivity of the Intestinal Tract. *Clinical Results Ann. Int. Med.* 4: 396-397 (Oct.) 1930. Dorst S. E. and Morris R. S. Bacterial Hypersensitivity of the Intestinal Tract. Its Treatment with Autogenous Vaccine and Sodium Ricinoleate. *Am. J. M. Sc.* 180: 650-656 (Nov.) 1930.

2. Horton B. T. and Brown G. E. Systemic Histamine-like Reactions in Allergy Due to Cold. A Report of Six Cases. *Am. J. M. Sc.* 178: 191-202 (Aug.) 1929.

Council on Physical Therapy

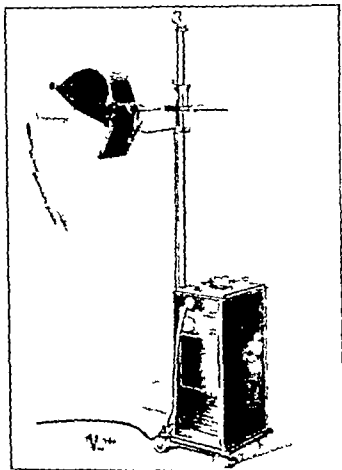
THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
H A CARTER Secretary

VICTOR ULTRAVIOLET MERCURY VAPOR QUARTZ LAMPS ACCEPTABLE

The General Electric X-Ray Corporation, 2012 Jackson Boulevard, Chicago, manufactures and offers for sale to the medical profession the following ultraviolet radiation generators

ALTERNATING CURRENT UNITS—AIR-COOLED

Model 'A' Mobile Unit with tubular column for reflecting hood mounted on rectifier control cabinet 115 or 230 volts 50 60 cycles Approximate shipping weight, 215 lbs (98 Kg)



Model A Air Cooled Quartz Lamp

base mounted on four casters 115 or 230 volts 50 60 cycles Approximate shipping weight 93 lbs (42 Kg)

WATER-COOLED—SELF CONTAINED

Model 'A' Mobile Unit with receptor for lamp mounted on rectifier control cabinet 115 or 230 volts 50 60 cycles Approximate shipping weight 220 lbs (100 Kg)

Model 'A' Mobile Unit with receptor for lamp counterweight suspended from curved overhead arm on rectifier control stand 115 or 230 volts 50 60 cycles Approximate shipping weight 275 lbs (125 Kg)

WATER COOLED—FAUCET TYPE

Model 'A' Mobile Unit with receptor for lamp mounted on rectifier control cabinet includes necessary attachments for plumbing, connections 115 or 230 volts 50 60 cycles Approximate shipping weight 180 lbs (82 Kg)

Model 'A' Mobile Unit with receptor for lamp counterweight suspended from curved overhead arm includes necessary attachments for plumbing connections 115 or 230 volts 50 60 cycles Approximate shipping weight 235 lbs (107 Kg)

Model 'B' Wall Unit with hinged receptor for lamp mounted on wall includes wall bracket for control cabinet and necessary attachments for plumbing connections 115 or 230 volts 50 60 cycles Approximate shipping weight 140 lbs (64 Kg)

COMBINATION OUTFITS

Model 'A' Mobile Unit with self contained water-cooling system combining air-cooled lamp with water-cooled lamp Air-cooled reflector hood and receptor for water-cooled lamp mounted on rectifier control cabinet 115 or 230 volts 50 60 cycles Approximate shipping weight 295 lbs (134 Kg)

Model 'A' Mobile Unit with faucet water-cooling system combining air-cooled lamp with water-cooled lamp Air-cooled reflector hood and receptor for water-cooled lamp mounted on rectifier control cabinet Includes necessary attachments for plumbing connections 115 or 230 volts 50 60 cycles Approximate shipping weight 255 lbs (116 Kg)

Model 'B' Mobile Unit with faucet water-cooling system combining water-cooled lamp with air-cooled lamp Air-cooled reflector hood and rectifier control cabinet mounted on wall Includes water-cooled lamp on hinged wall receptor Includes necessary attachments for plumbing connections 115 or 230 volts 50 60 cycles Approximate shipping weight 250 lbs (114 Kg)

Model 'A' Wall Bracket Unit reflecting hood suspended from wall bracket mobile rectifier control cabinet 115 or 230 volts 50 60 cycles Approximate shipping weight, 115 lbs (52 Kg)

Model 'B' Mobile Unit with tubular column for reflecting hood and rectifier control cabinet mounted on tripod base 115 or 230 volts 50 60 cycles Approximate shipping weight 220 lbs (100 Kg)

Model 'B' Ceiling Suspension Unit reflecting hood suspended from ceiling rectifier control cabinet mounted on wall bracket Includes wall bracket for control cabinet does not include suspension pipe or ceiling socket 115 or 230 volts 50 60 cycles Approximate shipping weight 160 lbs (73 Kg)

Model 'D' Unit with telescopic column for reflecting hood and transformer

The firm writes that the outfits listed above are inclusive of Uvac Quartz Tubes and Tungar Rectifier Bulbs (when required) While model A units are obtainable for operation on 25-49 cycle alternating current, order should so specify, as special wiring is required for these frequencies

DIRECT CURRENT UNITS—AIR-COOLED

Model 'B' Mobile Unit with control cabinet and tubular column for reflecting hood mounted on tripod base 110 or 230 volts Approximate shipping weight 190 lbs (86 Kg)

Model 'B' Ceiling Suspension Unit reflecting hood suspended from ceiling, control cabinet mounted on wall bracket Includes wall bracket for control cabinet does not include suspension pipe or ceiling socket 110 or 220 volts Approximate shipping weight, 130 lbs (59 Kg)

Model 'D' Mobile Unit with telescopic column for reflecting hood and transformer base mounted on four casters 110 or 220 volts Approximate shipping weight, 93 lbs (42 Kg)

WATER-COOLED—SELF-CONTAINED

Model 'A' Mobile Unit with receptor for lamp mounted on control cabinet 110 or 220 volts Approximate shipping weight 190 lbs (86 Kg)

Model 'A' Mobile Unit with receptor for lamp counterweight suspended from curved overhead arm on control stand 110 or 220 volts Approximate shipping weight, 245 lbs (111 Kg)

WATER-COOLED—FAUCET TYPE

Model 'B' Wall Unit, with hinged receptor for lamp mounted on wall includes wall bracket for control cabinet and necessary attachments for plumbing connections 110 or 220 volts Approximate shipping weight, 110 lbs (50 Kg)

COMBINATION OUTFITS

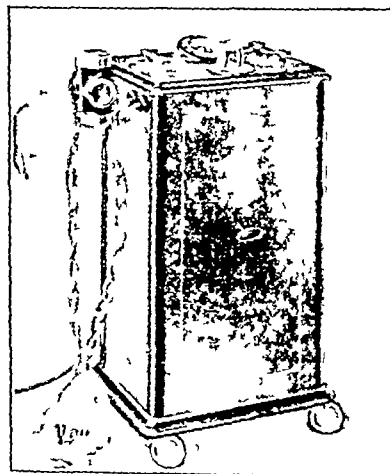
Model 'A' Mobile Unit with self contained water cooling system combining air cooled lamp with water cooled lamp Air cooled reflector hood and receptor for water cooled lamp mounted on control cabinet 110 or 220 volts Approximate shipping weight, 265 lbs (120 Kg)

Model 'B' Mobile Unit with faucet water cooling system, combining water cooled lamp with air-cooled lamp Air-cooled reflector hood and control cabinet mounted on tripod base water cooled lamp on hinged wall receptor Includes necessary attachments for plumbing connections 110 or 220 volts Approximate shipping weight 220 lbs (110 Kg)

The Council has investigated several of these ultraviolet radiation generators, both of the air cooled and water-cooled type, and has found the mechanical make-up and physical characteristics of them satisfactory

The General Electric Air-Cooled Mercury Vapor Arc Lamps model A, can be operated on an arc voltage of from 70 to as high as 90 The current consumption, when operated on 70 volts, is 3½ amperes As the arc voltage is raised to 90 there is no appreciable increase in the current remaining practically constant at 3½ amperes

The model B Air-Cooled Mercury Vapor Arc Lamps can be operated on an arc voltage of from 70 to 80 the current consumption being 3½ amperes



Model A Water Cooled Quartz Lamp

In the case of the air cooled lamps the time for a first degree erythema on an average skin at a distance of 30 inches is on the average 30 to 45 seconds when operating on an arc voltage of 70 If for example the arc voltage of the model A lamp is raised to 90 it will produce a first degree erythema on an average skin at a distance of 30 inches in approximately 15 to 30 seconds

The General Electric Water Cooled Quartz Mercury Lamps are designed to operate on an arc voltage of 50 the current consumption at this voltage being approximately 3.3 amperes

A minimum perceptible erythema may be produced on contact with the average skin in about fifteen seconds

The Council on Physical Therapy declares the ultraviolet generators, manufactured by the General Electric X-Ray Corporation, eligible for inclusion in the list of accepted devices

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT
PAUL NICHOLAS LEECH Secretary

ANTIPNEUMOCOCCUS SERUM CONTAINING TYPE II ANTIBODIES

In 1924 the Council omitted all antipneumococcus serums containing type II antibodies, on the ground that the therapeutic efficacy of this organism had not been demonstrated. Preparations containing type I antibodies have been retained since that time. Recently there has been brought to the Council's attention evidence that with improved preparations and technique the experimental use of type II antibodies or of preparations containing this antibody in combination with type I is justified. The Council therefore voted to consider the acceptance of brands of antipneumococcus serum containing type II and voted to inform firms manufacturing the antipneumococcus serum of this decision.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

ANTIPNEUMOCOCCUS SERUM (See New and Non-official Remedies, 1933, p. 369)

Lederle Laboratories, Inc., Pearl River, New York

Antipneumococcus Serum Refined and Concentrated Types I and II—Prepared by immunizing horses with intravenous injections of cultures of type I and type II pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency for types I and II pneumococci the horses are bled aseptically and the serum is refined and concentrated by the method described by Lloyd D. Felton (*J. Infect. Dis.* December 1928, p. 543). The usual sterility and safety tests are made by injection into white mice and guinea pigs. The potency of the product is expressed in terms of the unit described by Felton (*Boston M. & S. J.* May 15, 1924, p. 819; *J. Infect. Dis.* September 1925, p. 309; October 1925, p. 309) and used by Park. While the unit originally was intended to be the amount of antibody that will protect against one million fatal doses of culture it has lately been taken to be 1/200 cc of the control serum (F 146) distributed by Dr. Felton. Marketed in packages of one syringe containing 10,000 units each of types I and II and in packages of one syringe containing 20,000 units each of types I and II each accompanied by a vial of normal horse serum (1:10 dilution) for the conjunctival test.

Dosage—Intravenously first dose 10,000 units of each type followed by a second dose of 20,000 units of each type in one hour; the second dose may be repeated at intervals of from four to six hours until the temperature falls and beneficial effects are evident.

Antipneumococcus Serum Refined and Concentrated Type II—Prepared by immunizing horses with intravenous injections of cultures of type I and type II pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency for type II pneumococcus the horses are bled aseptically and the serum is refined and concentrated by the method described by Lloyd D. Felton (*J. Infect. Dis.* 43:543 [Dec.] 1928). The usual sterility and safety tests are made by injection into white mice and guinea pigs. The potency of the product is expressed in terms of the units described by Felton (*Boston M. & S. J.* 190:819 [May 15] 1924; *J. Infect. Dis.* 37:199 [Sept.] 1925; 37:309 [Oct.] 1925) and used by Park. While the unit originally was intended to be the amount of antibody that will protect against one million fatal doses of culture it has lately been taken to be 1/200 cc of the control serum (F 146) distributed by Dr. Felton. Marketed in packages of one syringe containing 10,000 units and in packages of one syringe containing 20,000 units each accompanied by a vial of normal horse serum (1:10 dilution) for the conjunctival test.

Dosage—Intravenously first dose 10,000 units followed by a second dose of 20,000 units in one hour; the second dose is repeated at intervals of three to four hours until the temperature falls and beneficial effects are evident.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
RAYMOND HERTWIG Secretary

NOT ACCEPTABLE

GENUINE BUTTER-NUT BREAD (SLICED)

The L. D. Feuchtenberger Bakeries, Bluefield, W. Va., submitted to the Committee on Foods a white bread called 'Genuine Butter-Nut Bread (Sliced)' composed of patent flour, water, sweetened condensed skimmed milk, sucrose, lard, salt, malt syrup, yeast and a yeast food containing calcium sulphate ammonium chloride, sodium chloride and potassium bromate.

Discussion of Name—The name "Butter-Nut Bread" implies that the bread contains either butter and nuts or butternuts and in such quantity as to give the product distinctive physical and nutritional characteristics because of such ingredients and different from those of customary white bread. The baking formula does not contain butter, nuts or butternuts. The name is considered inappropriate, misinformative and misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name in accordance with the Committee's recommendations. This bread will therefore not be listed among the Committee's accepted foods.

NOT ACCEPTABLE

DR. BROOKS' CACAO LIQUOR

The Beacon-Gale Corporation, New York, submitted to the Committee on Foods a cacao liquor or chocolate called 'Dr. Brooks' Cacao Liquor'.

Discussion of Name—Food names containing the name of a doctor or including the title "Dr." lend themselves to misleading medicinal, quasimedical or therapeutic advertising. The names suggest medicinal uses or therapeutic values for the food. Advertising copy writers are prone to take advantage of such names and at least give medicinal implications to the advertising. Since such names are strong incentives to inappropriate advertising, their use for foods is to be discouraged. An appropriate name for this chocolate liquor is "Brooks Chocolate Liquor."

The manufacturer was informed of this opinion but has expressed himself as unwilling to change the name in accordance with the Committee's recommendations. This product will therefore not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary

MCCORMICK'S BEE BRAND VANILLA EXTRACT

Manufacturer—McCormick & Company, Inc., Baltimore
Description—Vanilla extract containing water, alcohol, sugar, and extractive matter of Mexican vanilla beans.

Manufacture—Mexican vanilla beans are warmed in an oven or in the sun and are packed in cases wrapped in blankets or matting, to induce "sweating" or fermentation. After a definite period the beans, while still warm, are removed from the cases and dried on frames in the sun. This procedure of alternate sweating and drying is repeated many times to develop the desired flavor, taking from four to six months. The beans become dark and lose moisture during the treatment. They are exported in wooden cases.

For preparing the extract at the American plant the beans are chopped, macerated in a menstruum of 95 per cent alcohol, water and sugar, and then percolated with the same solution, the extract is stored for from six to twelve months, filtered, and bottled

Analysis (submitted by manufacturer) —

	per cent
Water by volume	57.3
Alcohol by volume	42.1
Total solids	8.0 Gm per 100 cc
Ash	0.4 Gm per 100 cc
Sucrose	4.9 Gm per 100 cc
Vanillin	0.24 Gm per 100 cc
Lead number (Winton)	0.67

Claims of Manufacturer—Conforms to definition and standard for vanilla extract of the United States Department of Agriculture

BEECH-NUT STRAINED GREEN BEANS

(SLIGHTLY SEASONED WITH SALT)

Manufacturer—Beech-Nut Packing Company, Canajoharie, N Y

Description—Sieved green beans retaining in high degree the natural vitamin and mineral values, seasoned with salt

Manufacture—Fresh green beans are thoroughly washed and cleaned, stem and blossom ends are removed by hand. The subsequent treatment and processing are the same as for Beech-Nut Strained Carrots (THE JOURNAL, Nov 11, 1933, p 1562)

Analysis (submitted by manufacturer) —

	per cent
Moisture	93.5
Total solids	6.5
Ash	1.4
Sodium chloride	0.5
Fat (ether extract)	0.1
Protein (N X 6.25)	1.1
Crude fiber	1.1
Carbohydrates other than crude fiber (by difference)	2.8

Calories—0.2 per gram 5.7 per ounce

Vitamins and Claims of Manufacturer—See Beech-Nut Strained Carrots (THE JOURNAL, Nov 11, 1933, p 1562)

FOG BRAND EVAPORATED MILK

Packer—The Page Milk Company, Merrill Wis

Distributor—Ridenour Baker Grocery Company, Kansas City, Mo

Description—Canned, unsweetened evaporated milk, the same as Page Evaporated Milk Sterilized Unsweetened (THE JOURNAL, May 30, 1931, p 1872)

1 FANT'S FAMOUS FLOUR (MATURED, BLEACHED) 2 X-CEL FLOUR (MATURED, BLEACHED)

Manufacturer—Fant Milling Company, Sherman, Texas

Description—1 Long patent' hard wheat flour bleached
2 Long patent' flour prepared from soft and hard wheats, bleached

Manufacture—Selected wheat is cleaned scoured tempered and milled by essentially the same procedures as described in THE JOURNAL June 18, 1932 p 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (from 1.5 to 3 Gm per barrel) and with benzoyl peroxide and calcium phosphite (1 part to 50,000 parts of flour) and automatically packed in bags

Claims of Manufacturer—All purpose flours for home baking

1 G A GOLDEN TABLE SYRUP

(CORN SYRUP FLAVORED WITH REFINERS SYRUP)

Packer—Wheeler Barnes Company, Minneapolis

Distributor—Independent Grocers Alliance Distributing Company, Chicago

Description—Table syrup, corn syrup base (85 per cent) with refiners' syrup (15 per cent), the same as Golden Oak Brand Amber Syrup (THE JOURNAL, Dec 3, 1932, p 1948)

HIRES ROOT BEER CARBONATED BEVERAGE

Manufacturer—The Charles E Hires Company, Philadelphia

Description—Carbonated root beer extract beverage prepared under license by Charles E Hires Company, containing carbonated water, sucrose, and "Hires Root Beer Extract" or "Hires Root Beer Extract Bottlers' Solution," which is similar in composition to "Hires Root Beer Concentrated Extract" excepting for the quantity of caramel ingredient (Hires Root Beer, THE JOURNAL, Aug 13, 1932, p 563)

Manufacture—The carbonated beverage is prepared under license grants, the licensee is contracted to use the prescribed formula and method of preparation and advertising prepared under the direction of the Hires Company. That company makes a number of inspections each year of the licensee's plants and method of merchandising

Analysis (submitted by manufacturer) —

	per cent
Moisture	89.6
Total solids	10.4
Ash	0.1
Fat (ether extract)	0.0
Protein (N X 6.25)	0.0
Sucrose (copper reduction method) (immediately after bottling)	9.3

Calories—0.4 per gram, 11 per ounce

Claims of Manufacturer—A refreshing carbonated root beer extract beverage

WEIDEMAN BOY BRAND TOMATO JUICE

Packer—Vincennes Packing Corporation, Vincennes, Ind

Distributor—The Weideman Company, Cleveland

Description—Pasteurized tomato juice with added salt, retains in high degree the natural vitamin content, the same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb 20, 1932, p 640)

POSTUM

Manufacturer—Postum Company, Inc, New York

Description—Roasted blend of bran, wheat, molasses and malted wheat flour

Manufacture—Bran, malted wheat flour and molasses are blended in definite proportions, roasted, admixed with roasted wheat, ground and automatically packed

Analysis (submitted by manufacturer) —

	per cent
Moisture	1.0
Ash	5.9
Fat (ether extraction method)	2.7
Protein (N X 6.25)	12.3
Crude fiber	9.5
Carbohydrates other than crude fiber (by difference)	68.6

Calories—3.5 per gram 99 per ounce

Claims of Manufacturer—For the preparation of table beverage with water or milk. Contains no stimulating ingredient

LILY CAREY-IZED TABLE SALT

PIONEER CAREY-IZED TABLE SALT

PREMIUM SIFTED CAREY-IZED TABLE SALT

1 PER CENT MAGNESIUM CARBONATE ADDED TO PREVENT CAKING

Manufacturer—The Carey Salt Company, Hutchinson, Kan

Description—Table salt containing approximately 1 per cent added magnesium carbonate. The same as "Carey's Salt (Free Running)" (THE JOURNAL, Aug 26 1933 p 676)

Claims of Manufacturer—For table and cooking uses of salt. The added magnesium carbonate tends to preserve the free running' qualities. Does not cake or harden in the package

SWIFTS STERILIZED FLAVORED MILK

Packer—Libby McNeill & Libby, Chicago

Distributor—Swift and Company, Chicago

Description—Canned unsweetened evaporated milk the same as Libby's Sterilized Unsweetened Evaporated Milk (THE JOURNAL, June 13, 1931 p 2037)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 16, 1933

THE HAZARDS OF DRY CLEANING

One of the innovations of modern life is the widespread use of dry cleaning. This involves the employment of a variety of organic substances (in contrast with the familiar cleansing soap and water) that act as solvents of stains and detergents for dirt. A number of hazards may attend the use of the newer "dry cleaning solvents." Most of them are quite volatile and many present fire hazards because of their explosive or inflammable character. From this point of view the danger of burns, which already besets mankind in increasing degree, is additionally multiplied. A second possibility of harm lies in the effects of some of the cleanser solvents on the skin of the hands. This applies particularly to dry cleaning in the home, where the immersion of garments by hand into the cleanser is part of the usual routine of use. A further menace resides in the toxicity of the vapors that are almost inevitably encountered where the cleansing solvents are used.

According to a recent study¹ of the problem of dry cleaning, particularly as it relates to the home, more than fifty solvents sold for the purpose of cleaning fabrics at home by immersion were found to consist of one or more of the following organic liquids: carbon tetrachloride, chloroform, trichlorethylene, ethylene dichloride, propylene dichloride, benzene, toluene, ether, alcohol and petroleum distillates of various degrees of volatility. This is a formidable list of "dangerous chemicals" for any physician to contemplate, and it at once conjures up risks to human well being in more than one way. From the point of view of fire underwriters' hazards, the following points are taken into consideration in each case: volatility, ignition temperature, flammable or explosive limits, combustion intensity, vapor density, toxicity, nature or products of combustion, and nature of products of decomposition on storage or heating. Some of the compounds used, notably carbon tetrachloride and trichlorethylene, are noncombustible and nonflammable. Unfortunately, some

of the commercial proprietary products sold for the home are conspicuously labeled as nonexplosive. The report states that this is misleading to the housewife, who is likely to think that the term implies nonflammability. It is also incorrect in the strict sense of the word, since solvents of this type might explode under some circumstances. Various testing laboratories report petroleum distillates of this range as semexplosive.

The underwriters' laboratories also mention that the toxicity of a substance is recognized as having an indirect bearing on the fire hazard involved in the use of the product. The reason given for this is that a toxic substance, by contact with the skin or through inhalation, may act on the body of the person using it in such a way as to incapacitate or drive him away, thereby introducing a serious hazard in case of fire. It is reported, further, that some of the secret mixtures advertised as nonexplosive are made of gasoline and a nonflammable chemical. A fault of these solvents is that the added chemicals evaporate more quickly during use than does the gasoline, which leaves the fluid practically nothing but gasoline. Experience shows that the promiscuous sale of motor fuel for home dry cleaning is not uncommon. The study points out that warnings are rarely given. The purchase of gasoline at a filling station may also involve a hazard other than fire—that of tetra-ethyl lead poisoning. Present methods of obtaining gasoline at filling stations make it possible for the purchaser to obtain gasoline containing tetra-ethyl lead without being aware of the presence of this ingredient. Since tetra-ethyl lead is one of the few compounds definitely known to be poisonous merely by absorption through the skin, the dangers of handling gasoline containing this substance (aside from the fire hazard) cannot be overestimated.

As far as the local effects of the cleaner solvents are concerned, all of them were found, as might be expected, to have the effect of removing oil from the skin, thus causing it to become chafed and cracked, particularly around the fingernails. The open vessel method caused much worse chafing than did the closed vessel method, although, even in the latter case, immersion of the hands in the solvent was found to be necessary in removing and squeezing the fabrics. There appeared to be little difference between the drying and chafing action of the various solvents on the hands. The effect of toxicity due to absorption of some of these compounds, notably in the form of vapors through the lungs, obviously varies under the diversity of conditions that may arise in the cleansing process. The amount of volatile ingredients reaching the respiratory tissues will depend on the degree of protection afforded by ventilation, the vaporizing potencies of the compound used, and the individual caution to avoid inhalation of "fumes." Such substances as naphtha and petroleum benzine, as well as other volatile petroleum distillates, may exert a baneful influence on the

¹ Mack, Pauline B. Kessinger, Polly B. Ottinger, Elsa I. and Deck, Mary E. Home Dry Cleaning Solvents. J. Home Economics 25: 789 (Nov.) 1933.

nervous system,² and gasoline fumes cannot be endured long with impunity.³ According to Mack and her co-workers,¹ the heavier petroleum distillates decrease in toxicity with a decrease in their volatility, although cases of skin lesions leading to acne and eczema are known to result from contact of these products with the skin over a long time. They assert that, aside from its acute effects, carbon tetrachloride is known to produce chronic ills in persons breathing only small quantities of its vapors through considerable periods. The compound appears to have a particularly deleterious effect on liver and kidney tissues, some of the latter of which cannot be rejuvenated, once destroyed. Just how large an amount of the solvent is needed or how many and how long the periods of inhalation must be in order to produce chronic hepatic and renal ailments, however, is not now known. All chlorinated hydrocarbons are known to have both acute and chronic deleterious effects on the human organism. Concerning the amounts of such compounds as ethylene dichloride, propylene dichloride, or trichlorethylene needed to become dangerous, even less is known than in the case of carbon tetrachloride. The toxicity of benzene and related compounds has long been familiar.

Dry cleaning, though still practiced extensively in the home, has become a public business of large magnitude in recent times. This seems to be a rather fortunate development. Industrial management is learning to consider the hazards to which the worker in plants is exposed, and in many instances the newer laws and other modes of regulation make imperative suitable precautions to protect those employed. In the home, on the other hand there is less urge to guard against the menaces, and in many—perhaps most—instances there is no thought whatever of dangers well recognized in industrial plants. As evidence one may cite the appalling number of deaths from the inhalation of exhaust gases in garages attached to homes. Part of the lack of protection in the case of home dry cleaning solvents lies in the secret character of the vended products and the lack of adequate warnings on their labels. Probably the dangers will gradually become minimized by the growing abandonment of home cleaning in favor of commercial plants. The economic aspect of this change of practice will probably militate less and less against the latter. The recent study,¹ dealing as it did with the economy as well as the cleaning efficiencies of the various solvents, showed some unexpected outcomes. The cost of doing dry cleaning at home was found to be greater than is commonly supposed and the cleaning efficiencies of the various solvents proved to be low. The retail prices of many of the secret preparations were found to be high as compared with the actual cost of their ingredients. It was found that many of the preparations had not been sent to a recognized

laboratory to be examined for the fire hazard, and that even those which had been so examined did not carry on their labels a definite statement as to their degree of fire hazard. The presence of ingredients believed to be toxic even if handled in gallon quantities was revealed in many of the secret trade preparations. These were found in most cases to be accompanied by inadequate directions.

THE OUTLOOK IN NUTRITION

A survey of progress made in the science of nutrition during the past two decades serves to emphasize the tremendous sum total of effort expended by investigators in this field. Not only have many earlier observations been explained but unexpected relations have been established between nutrition and biologic function in lower forms of organisms as well as in man. Not the least of the accompanying phenomena is the widespread popular interest in nutrition, especially in some of its more novel features. A careful consideration of the broad scope and at the same time the logical detail of current knowledge of nutrition leads one to speculate on the direction which future effort will take in this field. In a recent discussion by Mendel¹ there has been brought to bear on this question the keen analysis and seasoned judgment of a pioneer investigator.

Attention is called to the influence, both direct and indirect, of the World War on nutrition. Not only were practical problems of the broadest scope presented for solution during that period, but before much time had elapsed it was acknowledged that the most valuable help came from those professionally trained in this field. Again, under the urge of national edicts the individual inevitably examined his personal dietary in the light of information which for the first time was by design made common property. The result of this large scale tutelage is a familiarity with at least some of the fundamental principles of nutrition on the part of a considerable portion of the population, food economics have been greatly influenced during the post-war period and individuals have not hesitated to alter their own dietary habits in order to conform to certain standards of physique or of alleged propriety.

Attention is further called by Mendel to the lack of current interest among investigators in what he calls "alimentation." By examining in detail a few of the accepted concepts regarding transformations in the gastro-intestinal tract, he points out the many uncertainties and actual gaps in the knowledge of secretion, digestion and absorption. For instance, "it must be frankly admitted that no adequate 'balance sheet' has ever been submitted for the disposal of digested and absorbed fat." There is likewise the suggestion that it would be profitable to reinvestigate the mode of entrance of the products of digestion of proteins into

¹ Hamilton, Alice. In a retail Plant in the United States. New York: Macmillan Company, 1925. pp. 407-479.
² Hargrave, H. W. The Anesthetic and Convulsant Effects of Carbon Tetrachloride. *Pharmacol. & Exper. Therap.* 16: 471 (Dec.) 1949.

¹ Mendel, L. B. *Science* 78: 317 (Oct. 13) 1933.

the blood Citing the recently demonstrated functions of the "trace" elements in nutrition, he directs emphasis toward the number of unusual, apparently adventitious, substances consumed by the individual, compounds occurring in plant and animal cells, the functions of most of which have as yet received scant attention

In discussing the future of nutrition, the Yale investigator thus urges a reexamination of some of the fundamental tenets of the science, but in light of progress in thought as well as in increased precision of methods This inevitably means a wider use of experimental animals supplemented with the best of microchemical technology

FIBRINOLYTIC STREPTOCOCCI

Hemolytic streptococci of human origin are apparently unique among the pathogenic bacteria of clinical interest, since they invariably possess the property of rapidly dissolving or liquefying human fibrin This lytic property may account in part for the ability of the streptococcus to invade tissues A simple method for the determination of the fibrinolytic action of bacteria or of bacterial filtrates was developed by Tillet and Garner¹ of Johns Hopkins University School of Medicine The technic consists in the addition of 0.5 cc of a broth culture of the micro-organism to be tested to 1 cc of 20 per cent oxalated human plasma Coagulation is induced by the addition of 0.25 cc of 0.25 per cent calcium chloride solution and the tubes are immediately placed in a water bath at 37.5 C Slight fibrinolysis is shown by a softening and release of the clot from the sides of the tube With complete lysis, all visible evidence of fibrin disappears from the mixture Tubes in which the clot is still unsoftened and firmly adherent at the end of twenty-four hours are considered negative

Twenty-eight strains of hemolytic streptococci of human origin were tested by the Baltimore physicians These included strains isolated from scarlet fever, septicemia, erysipelas, tonsillitis, acute nephritis and otitis media All these strains promptly and completely liquefied the routine human plasma clot, in most cases the lysis being complete within fifteen minutes In no case was complete liquefaction delayed more than forty or fifty minutes In contrast with this dramatic reaction, fifteen strains of hemolytic streptococci of non-human origin were completely nonfibrinolytic with their technic, a firm and apparently unaltered plasma clot being demonstrable at the end of twenty-four hours These strains included streptococci isolated from the cow, horse, rabbit and guinea-pig Three other animal strains, however, did give positive Tillet-Garner reactions A large number of other bacterial species were also tested and invariably found to be fibrinolytically negative These included such micro-organisms

as *Streptococcus viridans*, *Pneumococcus*, *B. typhosus*, *B. coli*, *B. dysenteriae* and the influenza bacillus The only other bacterial species thus far found to possess the Tillet-Garner lytic property were certain strains of the staphylococcus, which occasionally caused a slight softening of the human plasma clot if the reaction was allowed to continue for from eighteen to twenty four hours

The Tillet-Garner lytic action of hemolytic streptococci is at least relatively specific for human fibrin No trace of clot liquefaction is demonstrable with rabbit fibrin Other animal fibrins have not yet been tested This observation is of basic interest in bacteriologic research It suggests that many results of streptococcus research on rabbits, and possibly on other lower animals, are not applicable to human disease The fibrinolytic agent formed by the clinically pathogenic hemolytic streptococcus is apparently a soluble enzyme or toxin, since it is demonstrable in apparently full titer in cell-free, sterile broth filtrates An active anti-fibrinolytic immunity is demonstrable in the serum of patients who have recovered from acute hemolytic streptococcus infections The possibility of a local therapeutic use of the Tillet-Garner lysin as an in vivo solvent of fibrinous exudates has not yet been tested Whether or not antistreptococcus horse serum will neutralize the Tillet-Garner lytic factor has also not yet been determined

Current Comment

PIMENTO PEPPERS AND VITAMIN A

The pimento pepper is now widely used as a condiment, especially in salads, the bright red flesh is decorative and adds a mildly piquant flavor to the food mixture As a result of nutritional studies there has gradually developed a tacit assumption that highly colored natural food materials are likely to possess more or less unusual nutritive advantages It is of particular interest, therefore, that Ascham¹ has recently demonstrated that the pimento pepper is rather prominent among vegetable products as a source of vitamin A A few milligrams daily of the dried material suffices to promote excellent growth in experimental animals consuming a ration otherwise devoid of this factor The vitamin potency of the dried fruit is of the order of magnitude of that of good cod liver oil and far above that of butter In the form (canned) ordinarily used, pimentos are as rich in vitamin A as are carrots and somewhat richer than is butter Expressing the vitamin A assay in conventional terms, somewhat less than 20 mg of canned pimento contains approximately 1 unit A determination of the carotene content of this variety of pepper indicated that 2 mg of the dried material contained somewhat more than 0.5 microgram As it has been previously shown that 0.5 microgram of carotene is roughly equivalent to 1 unit of vitamin A, it appears that virtually all the vitamin A

¹ Tillet W S and Garner R L J Exper Med 58 485 (Oct) 1933

¹ Ascham L Bull Georgia Expt Sta 177, September 1933

potency of the pimento arises from the carotene contained in it. This agrees with other recent evaluations of fruits² and emphasizes a distinction, currently made, between the vitamin A potency of plant and of animal materials, that of the former being due largely to carotene whereas, in the latter, the pigment accounts for only a minor part of the vitamin A potency.³

Association News

MEDICAL BROADCAST FOR THE WEEK

Talk over Network of the National Broadcasting Company

The American Medical Association broadcasts each Monday afternoon from 1:30 to 1:45 Eastern standard time (12:30 central standard time). The subject for Monday, December 18, is "Have a Safe and Happy Christmas." The speaker will be Dr. W. W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association. Subjects and speakers for subsequent broadcasts will be announced weekly in THE JOURNAL.

The following additional stations have signified their intention of accepting the program: WCAE, Pittsburgh; WFI, Philadelphia; and WCSH, Portland, Maine.

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

December 19 Indigestion
December 21 Your Nose—Inside and Out

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

December 23 What Is a Mastoid?

THE CLEVELAND SESSION

Chairmen of Section Committees to Assist in Promotion of Section Exhibits

The fifteen sections of the Scientific Assembly have appointed exhibit committees to assist in the promotion of section exhibits at the Cleveland Session and in the coordination of activities between the Scientific Assembly and the Scientific Exhibit. Chairmen of the section exhibit committees are as follows:

PRACTICE OF MEDICINE

Irving S. Wright, New York

SURGERY, GENERAL AND ABDOMINAL

Alton Ochsner, New Orleans

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

L. D. Plase, Iowa City

OPHTHALMOLOGY

Thomas D. Allen, Chicago

LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY

William A. Mullin, Cleveland

PEDIATRICS

F. Thomas Mitchell, Memphis

PHARMACOLOGY AND THERAPEUTICS

Russell I. Haden, Cleveland

PATHOLOGY AND PHYSIOLOGY

W. C. MacCarty, Rochester, Minn.

Morgan, Agnes F. and Maden, Evelyn O. J. Nutrition 6: 83 (Jan.) 1953
Baumner, C. A. and Seerbeck, Harry. I. Pul. Chem. 101: 54- (Feb.) 1953
Shrenk, C. L. and Brasch, H. R. Ibid. 101: 701 (Apr.) 1953

NERVOUS AND MENTAL DISEASES

Groves B. Smith, Godfrey, Ill.

DERMATOLOGY AND SYPHILOLOGY

Fred D. Weidman, Philadelphia

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

Paul A. Davis, Akron, Ohio

UROLOGY

Russell S. Ferguson, New York

ORTHOPEDIC SURGERY

E. B. Mumford, Indianapolis

GASTRO-ENTEROLOGY AND PROCTOLOGY

A. H. Aaron, Buffalo

RADIOLOGY

S. W. Donaldson, Ann Arbor, Mich.

Application blanks for space in the Scientific Exhibit may be obtained from any of the foregoing chairmen or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Beaumont Celebration—A joint meeting of the Los Angeles County Medical Association and the Barlow Medical Library, December 5, commemorated the one hundredth anniversary of the publication of William Beaumont's "Experiments and Observations on the Gastric Juice and the Physiology of Digestion." Dr. George Dock, Pasadena, president of the medical library association, discussed the Beaumont collection at St. Louis; Dr. Rolla G. Karshner, Los Angeles, Beaumont's life, and Harry Ducl, Jr., Ph.D., Los Angeles, the book. There was a display of first and second editions of the volume and photostatic copies of letters of Dr. Beaumont and Alexis St. Martin, and of Dr. Beaumont's diary.

Society News—Dr. Roy F. Nelson, Oakland, discussed "Peroral Endoscopy—Its Place in Medical Practice" before the Alameda County Medical Association, November 20. At a meeting of the Pacific Physical Therapy Association in Hollywood, November 15, the speakers included Dr. George S. Sharp, Pasadena, on "Diagnosis and Treatment of Superficial Cancer." The Society for Neurology and Psychiatry, Los Angeles, was addressed, November 22, among others by Drs. Karl A. Menninger, Topeka, Kan., and Howard L. Updegraff on "Psychoanalytic Aspects of Plastic Surgery." Dr. Hugh Cabot, Rochester, Minn., speaks today before the Medical Symposium Society of Los Angeles, on "Effect of Drainage of the Kidney by Nephrostomy on the Recovery of Kidney Function." Dr. P. K. Ito, president Japanese Medical Association, was one of the guest speakers before the International Medical Club in Los Angeles, November 24. A joint meeting of Los Angeles County medical and dental associations will be addressed, December 19, by Dr. Edward C. Rosenow, Rochester, Minn., on relation of focal infection and elective localization of streptococci in the causation of disease. The fourth annual conference of mosquito abatement officials in California was held in Berkeley, December 12. Dr. Hugh Cabot, Rochester, Minn., presented a historical review of the development of prostatectomy, with an appraisal of present methods before the San Francisco County Medical Society, December 11.

COLORADO

Society News—At a meeting of the Medical Society of the City and County of Denver, December 5, Dr. Harry Gauss and Clough T. Burnett discussed "Interrelationship between Gastrointestinal and Renal Disease" and "Cardiovascular Syphilis" respectively, and Dr. Thaddeus P. Sears reported a case of hyperparathyroidism. A symposium on cancer of the breast was presented before the society November 21 by Drs. William W. Haggart, John E. Struthers, William W. Williams, Harry S. Finney, and William Walter Wasson.

CONNECTICUT

Thousands of Roentgenograms—Since the Connecticut State Health Department initiated its tuberculosis campaign in October, more than 12,000 children have had roentgenograms made. Because of the demands of the communities to have this work done, a second x-ray unit was placed in operation, November 9. The program, which is under way in more than 100 cities and towns in the state, is a joint effort to detect tuberculosis in the early stages sponsored by the state department of health, the state medical society, the state board of education and the state tuberculosis commission.

DISTRICT OF COLUMBIA

University News—Dr James W. Jobling, professor and executive officer, department of pathology, Columbia University College of Physicians and Surgeons, delivered the November lecture of the Smith-Reed-Russell series at George Washington University School of Medicine, on arteriosclerosis. William W. Cort, Ph.D., Baltimore, gave the October lecture on "Recent Developments in Our Knowledge of Hookworm Disease."

Society News—Speakers before the George M. Kober Medical Society, November 20, were Drs. Hugo Einstein on "Hydronephrosis and Hydro-Ureter" and Lewis B. Hill, Baltimore, "Psychiatric Aspects of Essential Hypertension."—Dr. Alexander Bruno of the American Hospital in Paris addressed the District of Columbia Tuberculosis Association, Washington, October 30.—Dr. Dean Lewis, Baltimore, delivered an address in the Army Medical Center, November 20, on "Diagnostic Failures and Their Lessons."

ILLINOIS

University News—Forty staff members of the University of Illinois College of Medicine, Chicago, visited the Urbana campus, November 17, and were addressed, among others by George L. Clark, Ph.D., on researches of medical interest from the x-ray laboratory, Elmer Roberts, Ph.D., genetic studies on inheritance of resistance to bacterial infection, and Frederic R. Steggerda, Ph.D., absorption and excretion in the colon.

Society News—Dr. Max Thorek, Chicago, addressed the McHenry County Medical Society, November 16, on "Nonsurgical Treatment of Osteomyelitis."—At a meeting of the Peoria City Medical Society, November 21, Brod O. Barnes, Ph.D., Chicago, discussed "Studies on the Pituitary Especially Related to Diabetes."—The McDonough County Medical Society was addressed in Macomb, November 14, by Drs. Frank J. Jirka and John J. McShane, Springfield, on epidemic encephalitis and scarlet fever control respectively. Mr. S. V. Layson discussed milk sanitation. All represented the state health department.—Dr. William J. Benner, Anna, was chosen president of the Southern Illinois Medical Association at its fifty-ninth annual meeting in Centralia, November 3. Dr. Ben Fox, West Frankfort, was named secretary, and Mount Vernon designated as the place for the next annual meeting. Speakers included Drs. Vilray P. Blair and Harry S. Crossen, St. Louis; Walter C. Alvarez, Rochester; George T. Palmer, Springfield; Andy Hall, Mount Vernon; William H. Smith, Benton; and Philip H. Kreuscher, Chicago.—At a meeting of the La Salle County Medical Society in La Salle, November 23, the speakers were Drs. John T. Murphy, Toledo, Ohio, and Vincent J. O'Connor, Chicago, on "Cancer of the Ovary" and "Recent Advances in the Field of Genito-Urinary Surgery," respectively.

Chicago

Dr. Lewis's Lecture at Northwestern—Dr. Dean Lewis, Baltimore, President, American Medical Association, will give an address, December 19, in Thorne Hall, Northwestern University Medical School, under the auspices of Pi Kappa Epsilon Fraternity. The subject will be "Tumors of the Sympathetic Nervous System and Their Clinical Syndromes."

Dr. Lahey to Lecture on Goiter—Dr. Frank H. Lahey, Boston, will present a symposium on goiter before the Chicago Medical Society, December 20. He will speak on "Diagnosis and Management of Thyroid States as the General Practitioner Sees Them." Participating in the discussion will be Drs. Nelson M. Percy on surgery, James H. Hutton, endocrinology, Charles A. Elliott, internal medicine and Maximilian J. Hubeny, radiology. At a dinner, preceding the meeting, Dr. Lahey will discuss "Thyroidectomy Technic."

Forging Narcotic Prescriptions—Don Eduardo de Ramos, following a plea of guilty to nine charges, was sentenced to one year in the House of Correction and fined \$500 and costs, November 20, for representing himself to be a licensed physi-

cian, according to the *Chicago Tribune*. De Ramos, who said he was a graduate of the University of Barcelona, Spain, was seized by federal narcotic agents, November 18, who charged him with forging narcotic prescriptions for his own use. Information in the headquarters of the American Medical Association reveals that de Ramos claimed to be a graduate of McGill University, Montreal and also of the Royal Academy of Medicine, University of Valencia, Spain. No record was found at either of these institutions showing the graduation of de Ramos.

INDIANA

Hospital News—Fire destroyed the Mills building at Boehne Tuberculosis Hospital, Evansville, November 25, with a loss estimated at \$85,000. The building is used for child patients, but none were in it when the fire broke out. It was the newest unit of the hospital, having been dedicated in 1929 and named for the late superintendent, Dr. George E. Mills. County commissioners have begun plans for rebuilding.

Society News—Dr. Albert Graeme Mitchell, Cincinnati, addressed the Indianapolis Medical Society, November 21, on tonsillectomy.—The Jay County Medical Society heard Dr. Robert M. Moore, Indianapolis, discuss coronary occlusion at its meeting in Portland, November 3.—Dr. Frank W. Gregor, Indianapolis, spoke before the Gibson County Medical Society in Princeton, November 13, on "Treatment of Skin Diseases Common to the General Practitioner, Including Fungus Infection."—Medical economics was discussed by Dr. Everett E. Padgett, Indianapolis, before the Carroll County Medical Society in Camden, November 10.—Dr. Vernon M. Leech, Chicago, discussed common diseases of the eye before the Porter County Medical Society in LaPorte, November 28.—At a meeting of the Fayette-Franklin County Medical Society in Connersville, November 14, Dr. Frank C. Walker, Indianapolis, spoke on pelvic infections.—At a meeting of the LaPorte County Medical Society in LaPorte, November 16, Dr. Newell C. Gilbert, Chicago, discussed "Bedside Diagnosis of Cardiac Arrhythmias."—Speakers before the Cass County Medical Society in Logansport, November 17, were Drs. Charles T. Dutches, Galveston, on "Intravenous Glucose," Harry D. Tripp, Kewanee, "Local Anesthesia in Labor," and Clifford L. Williams, "Neurologic Changes in Pernicious Anemia."—Dr. Floyd H. Lashmet, Ann Arbor, addressed the Northeastern Indiana Academy of Medicine at Kendallville, November 23, on "New Concepts of Renal Function and Nephrotic Type of Edema."

IOWA

Dr. Spilman Honored—Dr. Smith A. Spilman, past president of the Iowa State Medical Society, was guest of honor at a dinner given in Ottumwa, October 17, by the Wapello County Medical Society and the Ninth Council District Medical Society. Dr. Charles B. Taylor, Ottumwa, president, state medical society, presided and, in addition to Dr. Spilman, the speakers included Drs. Walter L. Bierring, Des Moines, President-Elect, American Medical Association, Murdock Banister, Ottumwa, and Thomas U. McManus, Waterloo, a former president of the state society. A gavel was presented to Dr. Spilman and it was announced that a life membership in the state medical society had been conferred on him.

Tilton Fined Again—Lester J. Tilton, head of the Tilton laboratories at Clinton and known to his "patients" as "Dr. Tilton," was fined \$1,000 by Judge Dewey in Des Moines, November 27, for violation of the federal Food and Drugs Act. A jury had previously found him guilty in Davenport. He was given forty-two days to perfect an appeal. The fine was the maximum under the act for a first offense. \$200 on each of five counts for selling preparations falsely and fraudulently recommended for the treatment of numerous diseases. The drugs, which the government proved were falsely and fraudulently labeled, included:

Pyroligneous Compound number 1 recommended for ulcers of the stomach, sore mouth, pyorrhea, sore throat, hemorrhoids and female troubles.

Pyroligneous Compound number 2 recommended for swollen glands, varicose veins and goiter.

Healing Ointment recommended for tonsillitis, sore throat, abscesses, appendicitis plus conditions of pleura and sore lungs.

Analyses of the products showed that the ointment was a compound of petrolatum and turpentine, and that the liquids were small amounts of pyridine, ammonia and ammonia compound. Tilton testified that the liquids were fractional distillates of peat taken from his farm. Tilton was convicted two years ago in Chicago of violation of Illinois medical practice laws. He was fined \$2,000 and sentenced to from one to five years in prison. According to the *Chicago Tribune*, the appellate court confirmed the sentence December 11.

KANSAS

Personal—Dr Calton B Grissom, Syracuse, has been appointed health officer of Hamilton County—Dr James E Wolfe, Wichita, succeeds Dr Russell E Hobbs, resigned, as city director of public welfare—The appointment of Dr Edwin C Button, Great Bend as health officer of Barton County, succeeding the late Dr Addison Kendall, has been announced

Society News—Dr Tony G Dillon, Kansas City, discussed thrombosis of the renal veins before the Wyandotte County Medical Society, December 5—Dr La Verne B Spake, Kansas City, discussed infections of the mouth before the Wyandotte County Medical Society, November 18—At a meeting in Wellington Dr Harold Swanberg, Quincy, Ill., addressed the Tri-County Medical Society (Sumner and Cowley counties and Kay County, Okla.), November 16, on radium therapy

MARYLAND

Celebration in Honor of Dr Sudhoff—The eightieth birthday, November 26 of Dr Karl Sudhoff, professor emeritus of the history of medicine University of Leipzig was commemorated November 27, by members of the Johns Hopkins Medical History Club, in the lecture hall of the Welch Medical Library, Baltimore. Papers on the life and work of Dr Sudhoff were read by Drs Henry E Sigerist, professor of the history of medicine, Johns Hopkins University Medical School, Fielding H Garrison librarian of the Welch Medical Library and lecturer in the history of medicine, John R Oliver, associate in the history of medicine, and Ousef Temkin, associate in the history of medicine. An exhibit of the work of Dr Sudhoff was on display. Dr Sudhoff was director of the Institute of Medicine at the University of Leipzig from 1905 until his retirement in 1925 when he was succeeded by Dr Sigerist. He practiced in Germany more than thirty years, was a Prussian sanitary counselor for four years and was the first president of the German Society for the History of Medicine. He is known as a translator of Arabian and Egyptian hieroglyphics and ancient Hebrew texts. Dr Sudhoff delivered an address at the dedication of the Institute of the History of Medicine at Johns Hopkins University in 1929.

MISSISSIPPI

Society News—At a recent meeting of the Central Medical Society, the speakers were Drs E L Green, Carpenter, on 'Intramuscular Injection Method of Treating Pernicious Anemia with Liver Extract', Walter F Henderson, Jackson, 'Hernia of the Stomach Through the Diaphragm Causing Hemorrhage,' and Oscar N Arrington, Brookhaven, 'Cholecystitis'. Dr Marvin Brister Ware, Jackson, among others, addressed the society, October 3, on 'Acute Hemorrhagic Pancreatitis'. The East Mississippi Medical Society was addressed, October 19 among others by Dr Leonard Hart Meridian, on heart disorders—Speakers before the semiannual meeting of the Clarke and Six Counties Medical Society, November 8 included Dr W Likel Simpson, Memphis on 'Cancer of the Larynx,' and Col Edward W Smith, attorney, 'Legal Medicine'.

NEBRASKA

X-Ray Installation at Lincoln—X ray equipment with a constant potential of 700,000 volts has been installed for treatment of cancer at the Lincoln General Hospital. An annex to the hospital was built for the new apparatus consisting of a two story room for the eight transformers, a treatment room below the room containing the 15 foot tube and a control room. Eight tons of lead was used in the lining of the treatment room. A periscope allows the physicist or physician to observe the patient constantly and microphone and loud speaker equipment makes conversation possible between them. In addition there are thirty new rooms for patients in the wing. Dedication ceremonies were held October 5 with Lauriston S Taylor of the Bureau of Standards Washington D C as the principal speaker. Among those who attended were Drs Adolph Sachs Omaha president Nebraska State Medical Association, Joseph Bixby Geneva president elect and Albert F Tyler Omaha. Dr Lucile L Smith is the radiologist in charge.

NEW JERSEY

New Officials of State Society—The office of the Medical Society of New Jersey has been moved to 157-159 La Street Trenton. Dr Leroy A Wilkes is executive secretary and Dr Alfred E. Shipley Trenton editor of the

society's journal. Dr Henry O Reik, Atlantic City, formerly held both these positions.

Health at Camden—Telegraphic reports to the U S Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended December 2 indicate that the highest mortality rate (183) appeared for Camden and the rate for the group of cities as a whole was 114. The mortality rate for Camden for the corresponding week of 1932 was 154 and the rate for the group of cities, 12. The annual rate for the eighty-five cities was 109 for the forty-eight weeks of 1933 as against a rate of 11 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas or that they have large Negro populations may tend to increase the death rate.

NEW MEXICO

Personal—Dr Howe Eller, Los Lunas, has been appointed health officer of Bernalillo County to succeed Dr James R Scott. Dr Eller's appointment will be effective, June 1, 1934, when he returns from a year's study of public health at Johns Hopkins University. Meanwhile Dr Ralph W Mendelson, Albuquerque, will serve as acting health officer.

NEW YORK

Society News—Dr Edward M Livingston, New York, addressed the Suffolk County Medical Society, Riverhead, October 26, on 'Abdominal Emergencies—Relation to Tenderness, Hyperalgesia and Abdominal Rigidity'.—Dr William Edward Gallie, Toronto addressed the Medical Society of Erie County, Buffalo November 1, on 'Treatment of Fractures Involving Joints'.—Dr Ethan Flagg Butler, Elmira, addressed the Saranac Lake Medical Society, November 1, on 'Carbon Dioxide Content of Blood as an Index of Respiratory Efficiency'. Dr Stafford D Warren, Rochester, addressed the society, November 15 on artificial fever and Dr Wardner D Ayer, Syracuse, December 6, on intracranial hemorrhage.—Dr Murray B Gordon, New York, addressed the Buffalo Academy of Medicine, November 22, on 'Criteria of Diagnosis of Endocrine Conditions in Infants and Children'.—Dr Frederick H Flaherty, Syracuse president, Medical Society of the State of New York, addressed the Broome County Medical Society and the Binghamton Academy of Medicine, Binghamton December 5 on the work of the state society.—Dr Albert D Kaiser, Rochester, was the guest speaker at the annual dinner meeting of the Medical Society of the County of Albany, December 12. Dr Kaiser described his experiences as physician on an expedition to Africa.

New York City

Sale of Poisonous Eyelash Dyes Prohibited—Reports of serious injury to the eyes of women and girls indulging in a new practice of dyeing eyebrows and eyelashes led the New York City health department to place a ban on the sale of all dyes containing aniline derivatives, paraphenylenediamine, paratolylene diamine and various dangerous mineral salts. No cases of eye injury have been found in New York, the department announced but a study showed that the use of dyes is increasing rapidly and the action was taken as a precautionary measure.

Afternoon Lectures at the Academy—Dr Arthur Krida, professor of orthopedic surgery, New York University and Bellevue Medical College delivered the fifth afternoon lecture of the New York Academy of Medicine, December 1, on 'Surgical Treatment of Chronic Arthritis'. Dr Lloyd F Craver gave the sixth lecture, December 8 on 'Differential Diagnosis and Treatment of Lymphosarcoma, Hodgkin's Disease and Allied Conditions' and Dr William W Herrick the seventh, December 15 on 'Acute Rheumatic Fever: A Review of Recent Studies and Their Relation to the Clinical Features'.

Health Services in New York—About 250 organizations that render health services are listed in a new directory of social agencies published by the Charity Organization Society. Among these are 86 general hospitals and more than 100 special hospitals which include 38 for tuberculosis, 15 for nervous and mental diseases, 9 for women and children, 9 for the chronically ill, 8 for diseases of the eye, ear, nose and throat, 7 orthopedic hospitals, 6 for contagious diseases and 5 specializing in skin diseases and cancer. There are 70 maternity services and 23 nursing services in the city. The directory shows 208 agencies for family welfare and about 200 engaged in child welfare work. More than 50 agencies provide education and

care of the physically handicapped, including 25 serving the blind, 15 the crippled, 15 the deaf and hard of hearing and 5 offering various general services to the handicapped. About 1,000 agencies are listed in the directory

NORTH DAKOTA

Woman Physician Honored—Dr. Helena K. Wink, Jamestown, was guest of honor at a banquet given by the Stutsman County Medical Society, October 25, in honor of her completion of fifty years in the practice of medicine. Dr. William A. Gerrish paid tribute to Dr. Wink in a review of medicine in North Dakota during the past half century and Dr. Claude F. Dixon, Rochester, Minn., delivered an address on cancer of the colon. Dr. Wink is a graduate of the University of Michigan Medical School.

OHIO

Director of Surgery Appointed—Dr. Charles A. Bowers, Cleveland, has been appointed director of the division of surgery of St. Luke's Hospital, Cleveland, to succeed Dr. Carl H. Lenhart. Dr. Bowers has been acting director since Dr. Lenhart resigned last December to become director of surgery at University Hospitals. A graduate of Johns Hopkins, Dr. Bowers was on the resident surgical staff of Lakeside Hospital for seven years and has also served on the staffs of City and Charity hospitals in Cleveland. He has been president of the board of education of Shaker Heights, a suburb of Cleveland, for ten years.

PENNSYLVANIA

Society News—Dr. Richard A. Kern, Philadelphia, recently delivered a series of lectures on allergy before the Lackawanna County Medical Society, Scranton. Dr. Frederick B. Utley, Pittsburgh, addressed the Erie County Medical Society, November 7, on focal infections.

Personal—Dr. Harold A. Miller, Pittsburgh, has been appointed by the state emergency relief board as director of emergency medical relief, at the Capitol Building, Harrisburg. Dr. John C. Davis has recently been appointed superintendent of the Meadville (Pa.) City Hospital. Dr. John L. Ressler has resigned as superintendent of Lancaster County Hospital for Insane, Lancaster.

Local Physicians to Examine Conservation Corps—At the suggestion of Dr. Harold A. Miller, director of medical relief for the State Emergency Relief Board, members of the winter conservation camp corps will be examined for fitness by the local medical profession in communities where the camps are located, according to the *Pittsburgh Medical Bulletin*. In Pittsburgh, laboratory work, except urinalyses, will be done by the city department of health. A small fee will be paid for the examinations, which will be made at central examining depots on days specially arranged.

Philadelphia

Society News—Speakers at a meeting of the Philadelphia Urological Society, November 27, were Drs. Sloan G. Stewart, on "Cardiovascular Considerations in Benign Prostatic Obstruction," Herbert T. Kelly, "Medical Management of Diabetes Complicating Benign Prostatic Obstruction" and George C. Griffith, "Choice of Anesthesia in Prostatic Surgery."

Committee on Emergency Relief—Dr. George P. Muller has been appointed chairman of a medical advisory committee to the Philadelphia County Emergency Relief Board for arbitration of questions of dispute concerning payment to physicians for relief work and interpretations of the rules governing the new plan. Members are Drs. Charles A. E. Codman, Myer Solis-Cohen, William Egbert Robertson, Francis Ashley Faught, Nathan Blumberg and Isidor P. Strittmatter.

TENNESSEE

Society News—Dr. Charles C. Vinsant, Maryville, addressed the Blount County Medical Society, December 7, on "Early Diagnosis and Treatment of Carcinoma of the Cervix," and Dr. Horace Dewey Peters, Knoxville, spoke, December 14, on "Hyperthyroidism." Dr. Gilbert M. Roberts addressed the Hamilton County Medical Society, Chattanooga, December 14, on transurethral resection of the prostate. Drs. John B. Haskins, Chattanooga, and Jesse B. Naive, Knoxville, addressed the McMinn County Medical Society, November 9, on appendicitis and tuberculosis, respectively. Dr. William Litterer addressed the Nashville Academy of Medicine, November 7, on "Laboratory Diagnosis of Rocky Mountain Spotted Fever

and Endemic Typhus Fever."—Speakers before the medical society of Henry, Carroll, Weakley and Benton counties in McKenzie, November 7, were Drs. William D. Haggard, on "Carcinoma of the Colon and Rectum," Milton S. Lewis, "Treatment of Eclampsia," and Henry L. Douglass, "Interstitial Cystitis." All are from Nashville. The Washington County Medical Society held its regular meeting at the Veterans Administration Facility, Johnson City, November 9. Speakers were Drs. Walter R. Wynne and William M. Bevis, of the hospital staff, on "Roentgenologic Diagnosis of Pulmonary Tuberculosis" and "Common Neuropsychiatric Conditions," respectively. Drs. Sidney Meeker and Arthur G. Jacobs addressed the Memphis and Shelby County Medical Society, November 7, on "Therapeutic Intravenous Use of Hydrochloric Acid" and "Diet and Vitamins in Relation to Teeth," respectively.

VIRGINIA

New Editor of State Journal—Dr. Wyndham B. Blanton, Richmond, has been appointed editor of the *Virginia Medical Monthly*, official organ of the Medical Society of Virginia, to succeed Dr. Alexander G. Brown, Jr., resigned. Dr. Brown had edited the journal since 1919, when it was acquired by the society. In addition he has been chairman of the program committee of the state society and clinical professor of medicine at the Medical College of Virginia. Dr. Blanton is professor of medicine at the college and, as chairman of the state society's committee on history of medicine in Virginia, has compiled three volumes of state medical history.

PUERTO RICO

Legislature Honors Dr. Ashford—A bronze bust of Dr. Bailey K. Ashford, recently retired as a colonel of the medical corps, U. S. Army, has been completed and will be placed in the government building in San Juan. This honor was conferred on Dr. Ashford by unanimous vote of the legislature of Puerto Rico to recognize him as founder of the School of Tropical Medicine and as initiator of the first campaign against hookworm disease in America. In 1899, Dr. Ashford determined the cause of anemia of the agricultural class of Puerto Rico, later known as hookworm disease and in 1904 established the Puerto Rican Anemia Commission, which inaugurated the first drive against hookworm in America, treating 300,000 persons. Dr. Ashford is professor of tropical medicine and mycology at Columbia University, collaborating with the School of Tropical Medicine of Puerto Rico. He is a former president of the American Society of Tropical Medicine.

GENERAL

Nationwide Study of Foods Requested—A resolution requesting the federal government to cooperate with educational and medical institutions in making a nationwide study of nutritional values of foods in various sections of the country as an aid to combating dietary diseases was adopted by the Southern Medical Association at its annual meeting in Richmond in November. It was stated that studies made in isolated sections of the country are inadequate, since under certain circumstances chemical elements of foods show marked differences in value. In some localities, the resolution said, certain vegetables absorb poisonous substances which render them of doubtful value.

Oral and Plastic Surgeons Meet—Chalmers J. Lyons, D.D.S., Ann Arbor, Mich., was elected president of the American Association of Oral and Plastic Surgeons at its annual meeting in New York, November 16-18, and Dr. Ernest Fulton Risdon, Toronto, was reelected secretary. Among papers presented were the following:

Dr. John M. Wheeler, New York, Surgical Treatment of Exophthalmos in Graves Disease.
Dr. Joseph Eastman Sheehan, New York, Facial Paralysis.
Dr. William Darrach, New York, Treatment of Chronic Osteomyelitis.
Samuel R. Detwiler, Ph.D., New York, Embryonic Surgery and the Production of Anomalous.

At the annual dinner, Dr. Jerome P. Webster, New York, presented a paper on the life and works of Gaspare Tagliacozzo, "father of plastic surgery."

Index to Veterinary Literature—Through the Imperial Bureau of Animal Health, Weybridge, Surrey, England, there has just been made available the first number of a new index to the literature of veterinary medicine, *Index Veterinarius*. The editor of the *Index* is W. A. Pool, a member of the Royal College of Veterinary Surgeons and also editor of the *Veterinary Bulletin*. The *Index* is to be issued quarterly in a single alphabet. There is exceedingly full cross-indexing by countries, animals, organs and similar subheadings. Approximately one

thousand bulletins, medical and veterinary periodicals, pamphlets and reports relating to veterinary medicine are covered by the *Index*. The subscription price annually is £4

Officers of Society of Tropical Medicine—Dr Edward B Vedder, Washington, D C, was chosen president-elect of the American Society of Tropical Medicine at its annual meeting in Richmond, Va, November 15-17. Dr Frederick F Russell, New York, became president. Dr Francis W O Connor, New York, is vice president and Dr Henry E Meleney, Nashville Tenn, secretary. The next annual meeting will be in San Antonio, Texas, in November, 1934. The following honorary members were elected at the meeting: Drs William H Welch, Baltimore, Bailey K Ashford, San Juan, Puerto Rico, Charles Nicolle, director of Pasteur Institute, Tunis. W A P Schüffner, School of Tropical Medicine, Kolonial Institut, Amsterdam, Holland and Sir Leonard Rogers, London School of Hygiene and Tropical Medicine, London.

Government Services

Public Health Service Changes Policy on Appointment of Interns

The United States Public Health Service announces that during January, 1934, applications will be received for second year internships to begin about July 1, 1934, from physicians not over 30 years old who have graduated from class A medical schools and who will complete one year's internship at an approved hospital before next July. This is a change of policy, interns having been appointed heretofore immediately after graduation. Applications are desired only from candidates who are interested in the service as a career and who wish to take professional examinations similar to those given for appointment in the regular commissioned corps. In addition, applicants must appear before a board of the service for examination as to physical condition and general fitness. Those who pass these tests successfully will be offered appointments as interns with quarters subsistence and laundry and \$79.74 per month. Appointments will be made according to the number of vacancies, with the understanding that opportunity will be afforded in about a year to take the regular corps examination for appointment as assistant surgeon. Attainment of the necessary passing grade in this examination will establish the candidate's eligibility (for one year) for appointment as assistant surgeon. This rank corresponds as far as pay and allowances are concerned to the rank of first lieutenant in the United States Army. Those interested should address inquiries to the Surgeon General, U S Public Health Service, Washington, D C, in January to obtain more information and the necessary application blanks.

Report of Food and Drug Administration

During the last fiscal year the Food and Drug Administration collected 47,646 samples of food and drugs, according to the annual report issued November 14. The administration prosecuted 1,153 violators of the law and made 1,624 seizures. 2,777 legal actions in all. Of 22,205 samples of imported foods and drugs, 3,245 shipments were detained. The year's samples included an unusually large number of fresh fruits and vegetables examined for residues of poisonous sprays. Less than 7 per cent of interstate shipments exceed world tolerance the report states. An important prosecution resulted in prison sentences for pedlers of poison Jamaica ginger (*THE JOURNAL*, September 9 p 862). Others covered shipments of adulterated tomato paste, worm infested tullibee fish, dentifrices falsely and fraudulently labeled for diseases of the teeth and mouth, an inhalant falsely and fraudulently labeled as being useful in the cure of many diseases including tuberculosis and diabetes and allegedly watered oysters. The administration made 419 seizures of worthless patent medicines and initiated 307 criminal actions. It sampled and analyzed 310 shipments of so-called antiseptics, sixty-nine legal actions being taken. During the year only eight shipments of anesthetic ether were labeled as compared with nineteen the previous year. A survey of drugs listed in the U S Pharmacopoeia and the National Formulary undertaken during the previous year was finished. Of 2,022 samples collected and analyzed 352 or 12 per cent were substandard and were the subject of legal action. Thirty-four interstate and eighteen import shipments of alleged radioactive preparation were sampled during the year. Twenty of the domestic products warranted legal action and only four of the foreign shipments were allowed to enter.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov 25, 1933

Protection of Workers in Radiologic Departments

The X-Ray and Radium Protection Committee, which has been inquiring into the blood changes in workers in radiologic departments, has issued a questionnaire to hospitals, asking for details as to periodic examinations, length of service and results of treatment. At a meeting of the committee, presided over by the chairman, Sir Humphry Rolleston, the importance of blood examination as a danger signal was proclaimed. The following recommendations were made: 1. No person should be employed as an x-ray or radium worker whose blood (as tested by a complete blood count) or general health is unsatisfactory. 2. Before a person begins work or training, the normal leukocyte count should be found. If no total count reaches 6,000 per cubic millimeter and no lymphocyte count 1,200 the services of the worker should not be accepted. 3. Periodic total and differential counts should be made during the morning every six months in the case of the x-ray worker and every three months in the case of the radium worker. If a decided and sustained drop in the total leukocyte or lymphocyte count is found, the worker should cease work and be treated for an adequate period. When work is resumed, every care should be taken and the circumstances of the work be reviewed, so as to prevent any recurrence. It is not possible to lay down hard and fast rules for what may be considered pathologic changes in the blood, owing to the physiologic changes always taking place. But a leukopenia is the first change to occur in x-ray or radium workers. In order to detect this at an early stage, the following facts with regard to the content of the blood of normal persons must be taken into account. A leukocyte tide occurs twice daily, low in the morning and high in the afternoon, particularly between 3 and 4 o'clock. Superimposed on this are minor fluctuations detectable at intervals of minutes. The polymorphonuclears play the dominant part in all variations. In face of these variations, the leukocyte level of an individual can be determined only on the basis of a number of counts. Three afternoon counts should be made on the x-ray or radium worker when he begins work or training. Afternoon counts should be chosen as the afternoon rise in the number of leukocytes is less pronounced in leukopenia than normally. A mild leukopenia can thus be detected without difficulty. When the subsequent routine counts are made, a single afternoon count is sufficient, if satisfactory. If, on the other hand, it is decidedly lower than the level normal to the individual and this is confirmed by two further afternoon counts, a full investigation is essential.

Encouraging Record of Health of School Children

The annual report for 1932 of the chief medical officer of the board of education Sir George Newman shows that, with the exception of deformities, not a single disease has increased since 1931. Considering the widespread economic hardships, this is encouraging. Pulmonary tuberculosis shows a marked decrease. The incidence of definite cases was 0.5 per thousand in 1925. In 1932 it was only 0.2. Suspected cases were 1.6 and 0.6 respectively. Nonpulmonary tuberculosis also fell, from 1.1 to 0.7. Unfortunately the picture is less satisfactory in the case of defects of the teeth, eyes, nose and throat. In a report on deafness Dr Eicholz points out that 80 per cent of the cases of acquired deafness in England and Wales arise before 5 years of age, 10 per cent between the ages of 5 and 10 years and only 1 per cent after 10 years. These figures, the chief

medical officer points out, suggest that the problem of defective hearing in children of school age is educational to a much greater extent than medical. The causes of acquired deafness are predominantly meningitis, measles, scarlet fever and whooping cough. The number of children dentally inspected was 3,302,238, an increase of 7 per cent over the preceding year. The number found to require treatment was 2,285,644.

The Increasing Cancer Mortality

In opening an extension of the Liverpool Radium Institute and Hospital for Cancer and Disease of the Skin Lord Moynihan began by saying 'If the law of averages holds good, 100 people now within range of my voice will die of cancer.' He pointed out that, while the death rate of the great killing diseases had been reduced 20 per cent in the last twenty years, the death rate from cancer had increased 20 per cent. The infant death rate had been diminished by 45 per cent and the tuberculosis by 38 per cent. The greatest statistician in the world asserted that no fewer than half a million people die every year from cancer in the civilized world. Cancer was the only one of the great killing diseases in which the death rate was on the increase. The fact that more people lived to the cancer age was not a very considerable factor in the cancer mortality, nor was the greater accuracy of diagnosis responsible. If one should regard two of the organs affected with cancer in which the disease was easy to discover in the early stage one would find rather alarming facts. There had been an increase of 39 per cent in the death rate from cancer of the tongue in the last twenty years. Compared with forty years ago, the increase was 228 per cent. Excessive smoking rendered the tongue a vulnerable organ for the development of cancer. That should be a warning to the women who had adopted the male practice of smoking. The death rate from cancer of the breast had increased 28 per cent in the last twenty years.

A QUACK HAS NOT CURED ONE CANCER PATIENT

The enormous increase of cancer mortality took place despite the large number of operations performed for the disease throughout the world, with a mortality which was almost insignificant and with far more cures than ever before. Why, then, if cancer could be cured sometimes was it not cured oftener? There were many explanations. Physicians who were skeptical about the results of operation too often gave the advice "Wait and see." If the disease turned out to be cancer, there was a much greater chance of recurrence, even if the operation was performed by an expert surgeon. The incredulity of the public was another reason. Then there was the desire for irregular methods. In the whole history of medicine, not a single patient had ever been cured of cancer by a quack. Of women with local cancer of the breast 90 per cent were alive and well ten years after operation. But if the disease had long existed, 91 per cent were dead within the same period. Every case passed through a curable stage.

Ernest Edmund Maddox

The death, at the age of 73, of Ernest Edmund Maddox removes a great ophthalmologist. Born at Shipton, Oxfordshire, he was educated at Edinburgh University where he graduated in 1882 and won the Syme Surgical Fellowship in 1884 by an essay on the accommodation and convergence of the eyes. He was appointed assistant ophthalmologic surgeon and tutor on the subject in the Edinburgh Royal Infirmary. During this time he was associated with the well known ophthalmic surgeons Argyll Robertson and Berry and made a high reputation as a teacher and operator. Ill health then caused him to abandon practice, but his mental activity was so great that he published several books and articles. On recovery in

1889 he was appointed ophthalmic surgeon to the Royal Victoria Hospital, Bournemouth. At this health resort he passed the remainder of his life. He was distinguished by the originality and the clarity of his teaching. His book on the clinical use of prisms and the decentering of lenses reached five editions and became the standard work on the subject. A most original book on the ocular muscles followed and was translated into German. He dealt with disorders of the extrinsic muscles of the eye and demonstrated his points by ingenious geometric proofs. His methods of treating latent muscular defects became generally accepted. He wrote the article on refraction in Latham and English's 'System of Treatment.' He was also ingenious in the invention of instruments. The Maddox rod is used all over the world in testing for ocular imbalance. Another instrument devised by him is the cheiro-scope or "eye waker" which enables the partially amblyopic eye of a squinting child to be educated by a method that excites its interest. The child is induced to make a conscious effort with its hand, while its brain is unconsciously educated to perceive the image thrown on the retina by this effort. Other devices for which the ophthalmic surgeon has to thank him are his V test for astigmatism, his axis finder and his electrical warmer. In 1900 he was awarded the Middlemore prize of the British Medical Association for his essay on heterophoria as the best contribution to ophthalmology in the previous three years. In 1921 he obtained the Doyne memorial medal of the Oxford Ophthalmological Congress. He was a deeply religious man, whose whole life was inspired by the teachings of the Bible, but he never obtruded his views. He was extraordinarily modest and was kind to his patients, whether rich or poor.

PARIS

(From Our Regular Correspondent)

Nov. 1, 1933

The French Congress of Surgery

The forty second annual session of the Association française de chirurgie the most important of the medical congresses held at Paris during the month of October, was a brilliant success. It was presided over by Professor Leriche, who, from the Faculté de médecine de Strasbourg has recently returned to the faculty at Lyons from which he came. His opening address was characterized by the presentation of many lofty ideals. He paid homage to his teacher at the University of Lyons, Professor Poncet. He pointed out that a lesion often is only the effect of a physiologic disorder that disappears spontaneously when the disorder is relieved by a slight operation such as the extirpation of the parathyroids in scleroderma. His address was well received. Three topics were studied by the congress: (1) surgery of the parathyroids, (2) immediate treatment of fractures of the base of the cranium, and (3) surgical treatment of profuse gastroduodenal hemorrhages associated with ulcer.

SURGERY OF THE PARATHYROID

Velti of Paris and Young of Strasbourg presented a study on 'The Surgery of the Parathyroids.' The former gave a description of the surgical anatomy and emphasized the preponderant role of the external parathyroids and the need of avoiding their artery, which is terminal and the ligation of which always entails a necrosis. He considered at length the significance of calcemia and the various methods of determining it. Calcemia is highly important in hypoparathyroidism and in hyperparathyroidism but it does not play a part in slight functional disorders. In postoperative hypoparathyroidism calcemia is only an effect and not a cause. The untoward incidents may be grave, acute or chronic. Medical treatment has little effect, and grafts are seldom successful. Mr. Young considered particularly hyperthyroidism and the

clinical symptoms that it produces. Experimentally it acts on the metabolism of calcium and of phosphorus, which are always stimulated. He pointed out the chief clinical syndromes induced by the parathyroids: Recklinghausen's disease, ankylosing arthritis (in which surgery effects an improvement in only 25 per cent of the cases), osteomalacia, Paget's disease, scleroderma and keloids. He closed with a discussion on the technique of various operative methods. In the discussion that followed, Mr Mandl of Vienna stated that one often finds hypertrophy without adenoma, in which case an operation does not give good results. Mr Snapper of Amsterdam spoke on the changed proportions of calcium and of phosphorus, and on the value of ergosterol. Mr Alessandri of Rome referred to fourteen cases in which operation was followed by bad results and two recoveries from adenoma. Mr Pautrier of Strasbourg brought out that in scleroderma and in keloids he found hypercalcemia in two thirds of the cases. Mr P. Weil discussed the relations between ankylosing rheumatism and the parathyroids. Weissenbach, Githler, Durupt and Rocher (Bordeaux) referred to cases of scleroderma improved by operation. Moulouquet, de Quervain (Liege), Berard (Lyons), Paolucci (Bologna), Ufreduzzi (Turin) and Albert (Liege) discussed their operative treatments.

The immediate treatment of fractures of the base of the cranium was the subject of two papers by Lenormant and Patel (Paris) and Wertheimer of Lyons, who gave a minute description of cerebral and bony traumas and of all the proposed theories, without stating any very definite conclusion, so widely divergent are the views. In general they condemned the undue use of lumbar puncture and recommended as a preferable means of diagnosis an examination of the intraspinal pressure and observation of the retinal circulation. Suboccipital puncture and posterior drainage by the Odv method sometimes give good results. Likewise preventive anti-infectious serotherapy is useful.

The papers that followed led to some confusion, as each author vaunted his own special methods. Mr Lhermitte expressed the view that vasomotor disorders play the principal role in the accidents and that the surgeon can do nothing more than apply decompression by means of trephination. Mr Henschen of Brüssel expressed the same view. Mr Baillard emphasized the value of an examination of the retina. Mr Odv of Geneva pointed out that his method of posterior drainage is valuable only for the purpose of counteracting blocking. Mr Orban of Liege recommended ventricular puncture. Mr Delrez of Liege reported a series of 128 cases with 22 per cent mortality. Mr Oltramane of Geneva cited 280 cases in which intervention gave disappointing results. Mr Bach of St Quentin handled 180 cases treating medically the simple cases and applying trephination in grave cases. Mr Termier of Grenoble has been disappointed with the results of trephination and drainage and remains true to spinal punctures, deciding each case on its own merits the same as Mr Masini of Marseilles. Likewise Mr Martin of Brussels favored lumbar puncture as against trephination; likewise Mr Dziembowski of Poland. Mr Lixert of Ghent recommended intravenous injections of methanamine to prevent infection and Mr Proust of Paris advocated radiotherapy to aid in the absorption of hematomas. Mr Julliard of Geneva reported a series of 2086 cases covering a period of ten years. Of the 836 last cases 31 per cent had a fatal issue on the spot, 15 per cent were beyond the aid of surgery. Of the others 52 per cent ended in recovery and 28 per cent in invalidism. Mr Senechal of Paris advocated lumbar puncture and Mr Arnaud of Marseilles ventricular puncture. Mr de Martel recommended manometric study of spinal pressure and emphasized the value of ventriculography.

On the surgical treatment of severe gastroduodenal hemorrhages of ulcerous origin there were two papers, that of

Mr Felix Papin of Bordeaux dealt with the clinical indications. The danger from shock, the possible error in diagnosis, and the difficulty of finding the ulcer cause one to hesitate. Mr Vilmoth of Paris discussed the indications for medical and surgical treatment. Perforation is an indication for operation. For the intervention, local anesthesia is preferable. The exact nature of the intervention will be determined only after laparotomy but should be radical rather than palliative (gastrectomy and pylorotomy, gastroduodenectomy). For the last mentioned operation, which is of rather grave import, exclusion of the pylorus, associated with gastro-enterostomy, may be substituted. To summarize, treatment of these hemorrhages requires a surgeon with a clinical sense of caution and skilful in all forms of operative technique.

In the discussion, Mr Wilkie of Edinburgh took a conservative stand. An operation, he contended, is not advisable in peptic ulcer, unless the hemorrhages are repeated. Gastrectomy appears to him rarely indicated. In duodenal ulcer, ligation of the vessels and gastro-enterostomy give good results in most of the cases. The mortality is twice as high in men as in women. Mr Finsterer of Vienna advocated early operation as soon as the diagnosis of ulcer is reached. Late operations give mediocre results, but, he contends, still superior to the results of medical treatment. Mr Oliani of Trieste presented his personal statistics, which favored early and radical intervention. Mr Alessandri of Rome advised beginning always with medical treatment, with repeated small blood transfusions, with a view to operating later when the patient has become stronger. If the hemorrhage is repeated, an operation should be resorted to, following a heavy blood transfusion. Trier and Clavel (of Lyons) reserve intervention for the cases of arterial erosion of callous ulcers, which may often be diagnosed clinically, and for hemorrhages due to stasis above a stenosis, here a derivative intervention is sufficient. Hemorrhage due merely to gastritis, with or without ulcer, requires most commonly medical treatment, or a later operation between attacks. Several surgeons presented their own statistics. Begoun of Bordeaux, Loewy of Paris, Dziembowski of Poland, Podlaha of Brno, Ferey of St Malo, Delageniere, Jr, of Lemans, Pauchet of Paris, Arnaud of St Etienne, and Santy of Lyons.

The discussion of the papers on the three official topics was followed, as usual, by a large number of individual communications on divergent subjects pertaining to surgery: surgical treatment of lung cavities, Dr Maurer, Paris; treatment of exophthalmic goiter by means of subtotal extracapsular thyroidectomy, Dr Gentil. Two of these communications in particular awakened the interest of the congress: that of Dr Calot of Berck who demonstrated that, in congenital luxations and subluxations of the hip, his treatment by early reduction and application of a plaster cast in young patients, and by the application of a special orthopedic apparatus in the case of adults gives results much superior to those secured by surgeons who apply bony grafts. He strengthened his demonstration with roentgenograms taken of persons operated on in the manner last described.

There were numerous presentations of technical films. Numerous demonstrations were given each morning in the hospitals.

The three topics selected for discussion at the congress next year were (1) surgery of the suprarenal glands, (2) treatment of acute suppurative arthritis of the knee (war wounds excepted) and (3) pathogenesis and treatment of proliferative and stenosing rectitis.

Death of Dr Roux

The death of Dr Emile Roux, director of the Institut Pasteur at the age of 83 is announced. He served as the prepar-

ator of Pasteur and was associated with him in his researches on anthrax and rabies. He discovered the antidiaphtheritic serum simultaneously with Behring, and the antitetanic serum at the same time as Vaillard. Since then he had devoted himself exclusively to the management of the Institut Pasteur. The government took charge of the funeral ceremonies and the burial.

BERLIN

(From Our Regular Correspondent)

Oct 30, 1933

Reforms in the Institutions of Higher Learning

The reorganization of German institutions of higher learning is now being carried out. New regulations concerning habilitation at Prussian institutions have been established. Henceforth the demonstration of scientific performances or qualifications before the faculty in question will not suffice to secure permission to lecture at a Prussian institution of higher learning. An applicant must have served several months in a field station or a work camp and must have completed a course of training in an academy for the training of instructors in higher institutions of learning, which academy is to be newly created. When these two courses have been completed satisfactorily, a candidate for habilitation in a university or other higher institution will present his credentials to the faculty of the school in question, which will act on his application in the same way as heretofore. In the reorganization of the universities and other institutions, special importance is placed in the training of the oncoming generation of academic instructors. In the new regulations, it is emphasized that the decision whether an applicant has the necessary qualifications to become an instructor in a given institution was heretofore left to the faculty of that institution and in some cases entirely to the single representative of a department since, with the growth of the faculties, the faculty as a whole could not always form a judgment concerning the applicants. The result was, one reads further, that the selection of candidates was controlled more and more by departmental points of view and that the more general considerations were necessarily forced into the background. Thus capable scholars in a given field were selected and the general qualifications were left to chance. If the universities are to undergo a real reorganization, a fundamental change in the method of selecting new instructors must be made. The new decree of the Prussian minister of public instruction, it is pointed out, has in two ways taken account of this need, for in the work camp the candidate has an opportunity to reveal his true character, in surroundings that are not academic. The testimonial issued by the work service will have great weight in determining a candidate's suitability for habilitation. The Dozentenakademie (for the training of instructors) will receive acceptable candidates from the Arbeitsdienst (work service) and will provide regular courses for candidates seeking admission to the various departments of the university. In this academy, candidates will participate in a strictly organized community life and will study courses of a general scientific character. Here, again, the candidate will have to prove his worth in fields outside his specialty. As a result of close collaboration with his fellows in the academy a candidate is expected to develop the general impulses requisite for his scientific work in his specialty. The examination of the candidate in his specialty, which follows in due course, is, according to the new regulations, only the final step in the habilitation procedure. It is emphasized that no one will be selected as instructor solely on the basis of his capacity in his scientific specialty.

The *dozenten* of Prussia (instructors in universities and higher institutions of learning) have been organized into a

society. Several different posts have been created in keeping with the duties to be performed. There is a scientific bureau, which will deal with all questions bearing on the scientific training of the oncoming generation of instructors, questions pertaining to reforms in the curriculum, and the question of the rights and privileges of Germans who have emigrated to foreign countries. There is also a bureau for work service, which is closely connected with the corresponding bureau of the German student body. Further bureaus have been created to aid in the solution of the technical problems at the various universities and higher institutions. At the several universities, a corresponding organization will be effected before the opening of the fall semester. The local directors were recently admitted to a field station. Assistants and instructors who have no fixed appointment must become members of the *dozentschaft* or society of instructors but instructors holding definite posts and assistants in research institutes and in municipal hospitals attached to a university, may join or not, as they see fit.

The University of Giessen in Hesse has adopted somewhat different regulations. In Hesse the rector of a university may grant the *venia legendi* to a *privatdozent* if the ministerial department having jurisdiction has given its consent, at first for a period of seven years, subject to cancellation. If, before the end of the seventh year, a *privatdozent*, or instructor, has not been appointed to a professorship he automatically severs his connection with the instructional staff. This provision applies also to those instructors who have been previously appointed. Any one who is called by the government to occupy a chair is appointed as professor. The federal governor may appoint a *privatdozent* as a professor after at least five years of teaching activity. A *privatdozent* may, through the mediation of a colleague, appeal to the dean of the faculty and request that he be appointed as professor.

Reorganization of the Antituberculosis Campaign

With the transformation of the *Zentralkomitee* into the *Reichs-Tuberkulose-Ausschuss* as announced in *THE JOURNAL*, September 2 p 791, the authoritative state shows a determination to guarantee a more uniform conduct of the antituberculosis campaign. The previous efforts to effect a consistent organization of this crusade had the administration of the new committee stated, benefited only a portion of the people (the insured and their families), whereas the constantly increasing army of persons receiving welfare aid, and the families of the uninsured middle class, received scarcely any benefit. The most important factor, however, was that the mode of combating tuberculosis was not compulsory but was dependent to a great extent on the degree of interest shown by the persons affected, and on their financial condition. Furthermore, there was too much dissipation of energy in the organizations, and the individual patient was often neglected because of uncertainty as to which organization had jurisdiction. Duplication of effort was the result. This was shown in the erection of an undue number of institutions and homes of various kinds, for the care of the tuberculous. Often legislators or judicial administrators were called on to decide purely medical questions. Now the *Reich-Tuberkulose-Ausschuss* is the tuberculosis central. The committee is appointing a director for every district throughout the reich. The directors will be phthisiologists, who will see to it that all measures against tuberculosis are carried out uniformly. The present impracticable methods in vogue in most of the tuberculosis sanatoriums must be abolished. It may be impossible to avoid closing some institutions. It may be necessary to use some institutions for other purposes, in order more fully to use the others. An attack is to be launched against lupus. A special memorial on the subject has been prepared. The objective is a rapid and complete rounding

up of all lupus patients, bringing them under suitable medical treatment—when necessary, in special institutions and institutions of regular after-care—by proper organizations, until a complete cure is effected. As an introductory measure, a complete listing of all lupus patients has been undertaken, blanks on which the names of all such patients are to be entered having been sent to all practicing physicians.

NETHERLANDS

(From Our Regular Correspondent)

Oct 11, 1933

The Antituberculosis Campaign in the Netherlands

The tuberculosis mortality rate for the Netherlands during the past thirty years has dropped from 194 per hundred thousand in 1901 to 75 per hundred thousand in 1930. The Netherlands has at present the lowest mortality rate from tuberculosis of any country. At Amsterdam the tuberculosis mortality rate has diminished greatly, being at present only one third that of Paris. These results make interesting a study of the organization of the crusade against tuberculosis. The characteristic feature of the Netherlands system is private initiative. No legislation has been passed in the Netherlands concerning the combating of tuberculosis. The state however, subsidizes and controls the organizations founded to combat tuberculosis. The annual subsidies received from the state amount to 1,300,000 florins (\$800,000, current exchange). In addition to this participation by the central government, the provinces and the communes furnish financial aid. The government control is effected through a subdepartment of the ministry of the interior, which is charged with everything that concerns the hygiene of childhood, and crusades against tuberculosis and venereal diseases.

The organizations promoting the crusade against tuberculosis comprise the Central Netherlands Association, the provincial associations and the local associations. The central association comprises about 4,000 members and supervises a vast publicity campaign throughout the country. In each of the eleven provinces there is a provincial association which coordinates the local societies. There are 800 local societies, for which the crusade against tuberculosis constitutes the exclusive form of activity.

The antituberculosis dispensaries function in association with the attending physician. The country is divided into twenty-eight districts and each district has a dispensary in approximately the center. In the larger communes there are radiologic dispensaries to the number of 109. In charge of each district is a phthisiologic specialist who gives his whole time to this service. Experience has shown that the presence of the medical specialist in each dispensary is indispensable to securing the complete confidence of the attending physicians and the patients and there is no question that this method has produced good results. No treatment is given in any of the antituberculosis dispensaries in the Netherlands. The therapeutic institutions comprise sanatoriums, hospitals and centers for ambulatory patients. There are thirty-five sanatoriums available with a total of 3,560 beds. Patients who cannot go to a sanatorium receive ambulatory treatment in so-called day camps. The country has also about a hundred hospitals each with a special department for tuberculous patients. Three types of organizations provide child prophylaxis: the sanitary colonies, the sanatory schools and the fresh air placement centers. Mention must be made also of the extensive trial of preventive vaccination with the BCG vaccine as carried out at Amsterdam which has diminished child mortality to a considerable extent.

The problem of postsanatorial aid has been solved in the Netherlands as follows: There is no permanent post sanatorial

aid. The establishments confine their activity to temporary aid. Here patients are subjected to a progressive occupational reeducation, under severe medical control. In addition to these colonies, there are, in most of the provinces, workshops reserved for tuberculous patients, which are usually located near large cities. Several points stand out from this study. It will be seen that a methodical spirit and a sense of coordination characterize the organization of the antituberculosis crusade in the Netherlands. Collaboration of the general practitioner in the antituberculosis crusade contributes much to the ferreting out of cases. This is based on a strict abstention from all therapeutics in the dispensary. By reason of its organization, the dispensary becomes a center of the antituberculosis crusade, and its influence extends to the whole population.

Occupational Therapy in the Treatment of Tuberculosis

At the request of the association for occupational therapy and after-care in the treatment of tuberculosis, Drs. Bronkhorst, Hefling and Van Lier presented a communication on this subject. During the acute period, rest is absolutely required, either combined with special treatment or otherwise. Once a patient has improved to an extent that one can expect no further improvement from the treatment, occupational therapy should be begun to restore the patient's strength and readapt him progressively to a normal life. The patient receives no compensation for this work, as it serves exclusively for his rehabilitation and is of a different character from work that is paid for. In many patients a satisfactory rehabilitation cannot be brought about because there is a discrepancy between the recovery to be accomplished and the condition in which the patient may find himself after treatment. The after-treatment may, however, be remedied somewhat by (1) adaptation of hygienic and social conditions to the state of the rehabilitated patient, (2) augmentation of the theoretical and practical occupational value, and (3) regular medical examination. The tuberculosis treatment is dependent on two conditions: (1) degree of restoration and (2) nature of the conditions.

Effective treatment presupposes sufficient strength on the part of the patient. In estimating the patient's strength, account must be taken of the duration factors and especially of the time when the work is to be done. Tuberculous patients who do not recover 60 per cent of normal strength cannot usually be said to have recovered and are only temporarily improved.

Marriages

IVAN MAGNUS SANDBERG, Lostant III, to Miss Charlotte Drew of Iron Mountain, Mich., at Tiskilwa, October 13.

ROBERT ELMER SUMMITT, Gainesville, Fla. to Miss Willie May Lang of St. Petersburg at Palatka, October 12.

RICHARD KLATTE SCHMITT, Columbus, to Miss Margaret Gordon Laing of Iron Mountain, Mich., in October.

CHARLES G. SMITH, Red Bud, Ill., to Miss Madlen Hauff of Chicago at West Chester Pa. October 4.

DOUGLAS HAMILTON SPRLAT, Durham N. C., to Miss Edith Charlescraft Lucas of Charlotte, October 17.

SAMUEL BASIL SOLLEY, Coalburg, W. Va. to Miss Goldie Elizabeth Knight, August 16.

SAMUEL EDWIN HUGHES, JR. to Mrs. Willa Mae Davidson, both of Los Angeles, November 3.

RUDOLPH B. SIEGERT, Park III, to Miss Margaret Mary Twiss of Chicago, in November.

ROGER L. CREFFEL, to Miss Frances Irene Mitchell, both of Richmond Va. October 21.

WILLIAM CHRISTOPHER SCHILLER, Galena, Ill. to Miss Ruth Enderes at Joliet, October 8.

HUBERT WORA, to Mrs. Ethel Reed Gano, both of Denver, December 8.

Deaths

Alfred Fabian Hess * member of the Council on Pharmacy and Chemistry of the American Medical Association since 1932, died at his home in New York, December 6, of heart disease, aged 58 years. Dr Hess was born, Oct 19, 1875. He received his A B degree from Harvard University in 1897 and the M D degree from the College of Physicians and Surgeons of Columbia University in 1901. Following his graduation he studied abroad in Prague, Vienna and Berlin. He began the practice of medicine in New York, becoming professor of clinical pediatrics at the University and Bellevue Hospital Medical College. While in the practice of medicine he constantly engaged in research particularly in the field of nutrition. In this work he contributed not only of his efforts and time but also financially. His contributions especially in the field of the vitamins brought him international recognition. He received the honorary degree of doctor of science from the University of Michigan in 1930, he was awarded the Johns Scott medal and the sum of a thousand dollars for his method of producing a vitamin factor in food by the use of ultraviolet rays in 1927. In 1933 he was invited to deliver the Ingleby lecture at the University of Birmingham in England. Dr Hess was a member of the Association of American Physicians, the American Philosophical Society, the American Pediatric Society, the Society for the Advancement of Clinical Investigation and the Society for Experimental Biology and Medicine. He took intense interest in his work for the Council on Pharmacy and Chemistry, regularly attending each of its sessions and devoting much of his time to its problems. His contributions to medical literature included many papers in the field of pediatrics and experimental pathology and special monographs on scurvy and rickets. His death is a serious loss to the organizations to which he gave his services.

Miles Fuller Porter * professor of surgery in the Indiana University School of Medicine, Indianapolis, died in Fort Wayne, December 6. Dr Porter was born in Decatur, Ind. Sept 27, 1856. Following his education in the public schools, he received his M D from the Medical College of Ohio in Cincinnati in 1878 and an honorary M A degree from Franklin College in 1882. For some fifteen years after his graduation he did a general practice, devoting his attention thereafter wholly to surgery. He contributed many scientific articles to medical periodicals. Throughout his life he was especially interested in medical organization, serving as president of the Indiana State Medical Association, 1895-1896 and of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 1912-1913. In the American Medical Association he was a member of the Board of Trustees from 1900 to 1909, the period immediately following the reorganization of the Association and one of the greatest importance for the development of the Association. He served also as a member of the House of Delegates of the American Medical Association in 1912 and from 1915 to 1918. Dr Porter was surgeon to St Joseph's Hospital and consulting surgeon to the Indiana School for Feeble-minded Youth. He was also a member of the American Surgical Association, the Southern Surgical Association and Western Surgical Association, and a fellow of the American College of Surgeons.

Henry William Shaw * Augusta, Ga. Maryland Medical College, Baltimore, 1905, member of the state board of control for eleemosynary institutions, formerly associate professor of obstetrics, University of Georgia Medical Department, at one time member of the city, state and county boards of health, served during the World War, aged 51, died, October 27, of arterial hypertension and cerebral hemorrhage.

William Augustus Carnes, Memphis, Tenn. Tulane University of Louisiana Medical Department, New Orleans, 1896, served during the World War for many years in the U S Public Health Service on the staff of the U S Marine Hospital, aged 61, died, November 20, in the Garity-Ramsey Hospital, of arteriosclerosis and bronchopneumonia.

Edwin Cassius Bates * Houlton, Maine. Columbia University College of Physicians and Surgeons, New York, 1908, member of the Associated Anesthetists of the United States and Canada, past president of the Aroostook County Medical Society, formerly on the staff of the Aroostook Hospital, aged 50, died, September 23.

Henry Clement Finch, Broadalbin, N Y, Albany (N Y) Medical College, 1882, member of the Medical Society of the State of New York, for many years president of the board of education, bank president and county coroner, aged 75, died November 15, of carcinoma of the prostate and diabetes mellitus.

Hiram Lionel Horsman, North Grafton, Mass., Medical School of Maine, Portland, 1899, member of the Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry, assistant superintendent of the Grafton State Hospital, aged 63, died, November 13, of coronary thrombosis.

Cecil de Joline Harbordt, Dover, Del. Maryland Medical College, Baltimore, 1905, member of the Medical Society of Delaware, served during the World War, formerly on the staff of the Kent General Hospital, aged 50, died, November 6, in the Delaware Hospital, Wilmington, of hemorrhage due to esophageal varices.

Jacob Sidwell Hackney, Uniontown, Pa., Jefferson Medical College of Philadelphia, 1885, member of the Medical Society of the State of Pennsylvania, formerly secretary of the Fayette County Medical Society, on the staff of the Uniontown Hospital, aged 71, died, November 9, of myocarditis and coronary occlusion.

Frank Linden Richardson * Boston, Harvard University Medical School, Boston, 1903, member of the Associated Anesthetists of the United States and Canada, lecturer in surgery, Tufts College Medical School, anesthetist to the Boston City and Children's hospitals, aged 56, died, November 16, of heart disease.

Calvin T Hood, Chicago, College of Physicians and Surgeons of Chicago, 1885, member of the Illinois State Medical Society, on the staffs of the Cook County, Illinois Masonic and Garfield Park hospitals, aged 71, died, November 23, at Rochester, Minn., of heart disease, following an operation for goiter.

Parker Fletcher Southwick * Sandusky, Ohio, Western Reserve University Medical Department, Cleveland, 1902, at one time county coroner, served during the World War, for merly on the staff of the Good Samaritan Hospital, aged 55, died November 20, of cerebral hemorrhage.

William Robbins White, Providence, R I, Harvard University Medical School, Boston, 1877, an Affiliate Fellow of the American Medical Association for many years on the staff of the Rhode Island Hospital, aged 84, died, November 3, of arteriosclerosis and bronchopneumonia.

Horace Gibson, Sheldon, Ill., Northwestern University Medical School, Chicago, 1892, member of the Illinois State Medical Society, for many years mayor of Sheldon and member of the school board, aged 76, died, November 15, of coronary and cerebral thrombosis.

Charles Aloysius O'Reilly * Devon, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1900, member of the American Academy of Ophthalmology and Oto Laryngology, served during the World War, aged 55, died, November 1, of heart disease.

Joseph Ambrose Kerrigan * Webster Groves, Mo., University of the City of New York Medical Department, 1893, member of the Medical Society of the State of New York, aged 66, died, November 5, in the Evangelical Deaconess Hospital, of heart disease.

William James Costar, Jr * Chico, Calif., University of California Medical School, San Francisco, 1927, past president of the Butte County Medical Society, on the staff of the Enloe Hospital, aged 33, died, October 25, as the result of an automobile accident.

Emilius Morancy McKee, Lexington, Ky., Miami Medical College, Cincinnati, 1900, member of the Kentucky State Medical Association, aged 57, formerly on the staff of St Joseph's Hospital where he died, November 17, of carcinoma of the stomach.

Earl Rice, Ames, Iowa, Iowa State University of Iowa College of Medicine, Iowa City, 1891, College of Physicians and Surgeons of Chicago, 1895, member of the Iowa State Medical Society, bank president, aged 65, died, October 30, of heart disease.

William Summerill Vanneman, Tabriz, Persia, University of Pennsylvania School of Medicine, Philadelphia, 1888, an Associate Fellow of the American Medical Association, medical missionary, aged 70, died, October 30, of pneumonia.

James Mark Scoville, Warren, Ohio, Western Reserve University Medical Department, 1885, for four years county coroner, aged 74, formerly on the staff of the Warren City Hospital, where he died, November 12, of agranulocytic angina.

Adolph Ernest Voges, White Bear Lake, Minn., University of Minnesota College of Medicine and Surgery, Minneapolis, 1904, city and county health officer, deputy county coroner, aged 54, died, October 21, of heart disease.

Stephen Allen Newman, Mount Vernon, Mo., Marion-Sims College of Medicine, St. Louis, 1892 member of the Missouri State Medical Association aged 65, died, August 18, of injuries received in an automobile accident

John L. Hervey, Martins Ferry, Ohio Medical College of Ohio, Cincinnati, 1892, member of the Ohio State Medical Association aged 66, died, November 14, in the Martins Ferry Hospital, of chronic appendicitis and peritonitis

John Quincy Owsley Nashville Tenn. University of Tennessee Medical Department, Nashville, 1894 member of the Tennessee State Medical Association aged 62, died November 20, of carcinoma of the pancreas

John Robinson Dickson, Showchow Anhwei China University of Toronto Faculty of Medicine, Toronto Ont. Canada 1910, medical missionary, aged 49, died November 24 in Hwaiyuan of acute endocarditis

Ernest Stanley Barker, Cambridge, Mass. College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1899 aged 63 died suddenly November 6, of heart disease

Thomas Marshall Sloan, Newton N. C., Medical College of Virginia Richmond, 1929 aged 30 died November 12, in a hospital at Statesville, as the result of injuries received in an automobile accident

Charles Elmer Spring, Chicago Bennett College of Eclectic Medicine and Surgery, Chicago, 1893 aged 63, died November 9 in the Billings Memorial Hospital of a tumor of the prostate

Arthur J. Simpson Chillicothe Mo. University Medical College of Kansas City, 1895, on the staff of the Chillicothe Hospital, aged 59, died, October 31, of heart disease, following pneumonia

Robert Pearmain Loring, Newton Mass., Harvard University Medical School Boston 1875 member of the Massachusetts Medical Society, aged 81 died October 28, of cerebral hemorrhage

Joseph Albert Coogan Windsor Locks Conn., Bellevue Hospital Medical College, New York 1876 formerly member of the state legislature, aged 84, died November 24 of pneumonia

Ocran W. Roff Newton Kan. College of Physicians and Surgeons of Chicago 1893 member of the Kansas Medical Society also a pharmacist aged 66 died, October 28 of pneumonia

James Ashby Franklin Cameron Mo. Jefferson Medical College of Philadelphia 1886 Bellevue Hospital Medical College New York 1888 aged 71, died November 10 of heart disease

William Burgess Carman, Rochester N. Y. Hahnemann Medical College and Hospital Chicago 1884 aged 76, died November 14 of chronic bronchitis with bronchiectasis

Bernard Francis McElroy San Francisco University of California Medical Department 1899 aged 60, died November 7, in St. Francis Hospital of cerebral hemorrhage

Henry Ost, Newark N. J. Bellevue Hospital Medical College New York 1894 member of the Medical Society of New Jersey, aged 69 died October 16 of cardiac embolism

Herman August Bohl, Clear Lake S. D. Bennett Medical College Chicago 1912 aged 49 died November 10 in a hospital at Madison of abscess of the right lung

Albert J. Foelsch Gobles Mich. Bennett College of Eclectic Medicine and Surgery Chicago 1898 aged 57 died November 18 of a self-inflicted bullet wound

Harold Lawritz Stolpestad St. Paul University of Minnesota College of Medicine and Surgery Minneapolis 1901 aged 54 died October 15 of heart disease

Ella Prentiss Upham Asbury Park N. J. Woman's Medical College of Pennsylvania Philadelphia 1885 aged 82 died November 6 of cerebral hemorrhage

Christian H. Risser Payson Ariz. St. Louis University School of Medicine 1909 aged 54 died November 4 in St. Joseph's Hospital Phoenix of pneumonia

James Oettiker Pottsville Pa. University of Pennsylvania School of Medicine Philadelphia 1875 aged 80 died October 19 in Shreveport La. of uremia

Vincent John Thomas O'Neill Yonkers N. Y. Medical-Chirurgical College of Philadelphia 1915 aged 48 died August 29 of torticollis and myocarditis

James Ernest Browne Howell Mich. University of Michigan Medical School Ann Arbor 1890 aged 66 died November 16 of cerebral hemorrhage

Frank Edward Shaykett Brandon Wis. Rush Medical College Chicago, 1894 village president, aged 68 died suddenly, November 8 of heart disease

Elvin Franklin Scheidegger Green River, Wyo. University of Nebraska College of Medicine Omaha, 1924, aged 40, died November 4, of influenza

Elmore W. Le Roy Chicago Hahnemann Medical College of Philadelphia, 1883 aged 73, died November 26, in Gary, Ind., of cerebral hemorrhage

William Elder Wolff Arendtsville, Pa. Medical-Chirurgical College of Philadelphia, 1897, aged 64 died, November 3, of coronary occlusion

Claude H. McMahan, St. Louis, Missouri Medical College St. Louis, 1899 aged 58, died, November 2, of injuries received in an automobile accident

Howard Augustus Gallup San Luis Obispo Calif. Cooper Medical College, San Francisco 1911, aged 49, died October 9, of coronary occlusion

Andrew Blair Nelson, Eastbank, W. Va. University of Louisville (Ky.) School of Medicine 1907, aged 52 died September 18 of heart disease

Thomas R. Hawkins, Cameron Wis. State University of Iowa College of Medicine, Iowa City, 1888, aged 71 died November 17, of heart disease

Albert T. Getchell, Mount Pleasant, Mich. University of Michigan Medical School Ann Arbor, 1884, aged 77, died, November 15 of heart disease

Samuel Edward Caldwell, Milan Tenn., Vanderbilt University School of Medicine, Nashville, 1889, aged 71, died November 15, of pneumonia

Charles Beaver, Detroit, Eclectic Medical Institute, Cincinnati 1881, aged 72, died, November 10, of epithelioma of the tongue and endocarditis

John Henry Trent, Marshfield Ind., Long Island College Hospital, Brooklyn, 1876, Civil War veteran aged 86, died, October 19, of myocarditis

Earl Miller, Detroit, Central College of Physicians and Surgeons Indianapolis, 1898 aged 61, died, November 22 of carcinoma of the stomach

Joseph Pryse Sutton, Kitts Ky. University of Louisville School of Medicine 1910, aged 46 died suddenly, November 6 of coronary thrombosis

George Herbert Small, Bloomington Ill. Hahnemann Medical College and Hospital, Chicago, 1903, aged 57, died October 29 of uremia

Moses Schonfield Pittsburgh Western Pennsylvania Medical College Pittsburgh, 1901 aged 53 died October 23 of coronary sclerosis

J. M. McLendon, Gould Ark. Kentucky School of Medicine Louisville 1883 mayor of Gould aged 74 died, November 20 of carcinoma

John W. Palmer, Knappa Texas University of Tennessee Medical Department Nashville 1887 aged 78, died October 31 of tuberculosis

Eliza A. Shetter Ray, Philadelphia Woman's Medical College of Pennsylvania Philadelphia 1886 aged 71 died November 20

D. E. Burrow, Russellville Ky. Eclectic Medical Institute Cincinnati, 1898, aged 58 died November 14 of cerebral hemorrhage

Charles L. Van Doren, Urbana Ill. Bennett College of Eclectic Medicine and Surgery Chicago 1881 aged 76 died October 27

Herman B. Tihen, Andale Kan. University Medical College of Kansas City 1893 aged 64 died October 15 of leukemia

George Hardy Dickinson, Milwaukee Milwaukee Medical College 1903 aged 63 died November 21 of angina pectoris

Alfred Clark Smith, Columbus Ohio Starling Medical College Columbus 1898 aged 69 died November 19 of heart disease

Anthony Joseph Taugher, Milwaukee Rush Medical College Chicago 1899 aged 61 died November 1 of heart disease

Walter B. Parke Camp Douglas Wis. Milwaukee Medical College 1903 aged 62 died October 27 as the result of a fall

Frank B. Bryan Childress Texas Louisville (Ky.) Medical College 1905 aged 53 died October 20

Correspondence

TOXICITY OF EMETINE

To the Editor—In the review on amebic dysentery in the November 18 issue of *THE JOURNAL*, in discussing the treatment, the statement is made "In the chronic cases Craig recommends continuous treatment with emetine bismuth iodide or chiniofon." It is apparent that the writer quoted from my article in Musser's "Practice of Medicine," but in that article it is definitely stated that "in chronic amebic dysentery, during the acute exacerbations the treatment should be with emetine bismuth iodide or chiniofon." It will be noted that continuous treatment with emetine bismuth iodide is not recommended but that the use of this drug is limited to treatment during the acute exacerbations of the chronic type of amebic dysentery.

I would appreciate this statement being corrected in a future issue of *THE JOURNAL*, as it has apparently caused the impression that I recommend continuous treatment with emetine which is far from the truth. In all of my writings on this subject I have warned against such continued use of this drug because of its toxic effects and have stated emphatically that it should be used only to control the symptoms of diarrhea during the acute attack of amebic dysentery and that it should never be given to exceed 1 grain a day for a period of twelve days. Usually this dosage of emetine will control the dysenteric symptoms in from five to eight days. I have also repeatedly stated that emetine is of very little value in actually curing cases of amebiasis and for this reason other drugs should be used for this purpose, emetine being relied on only to control the acute symptoms of amebic dysentery, which it does very satisfactorily.

CHARLES F CRAIG M D, New Orleans

Director, Department of Tropical
Medicine, Tulane University of
Louisiana School of Medicine

FAVISM

To the Editor—The paper on favism by McCrae and Ullery (*THE JOURNAL*, October 28, p 1389) interested me greatly. The authors are to be congratulated for their splendid report of their case of hypersensitiveness apparently to the fava bean itself.

My interest in this bean dates back to 1924, 1925 and 1926, during which time I studied and proved clinically and immunologically that the asthma and hay fever of a patient whose symptoms occurred during the spring months were caused by the inhalation of the pollen of the fava bean. It was my feeling that "although this observation was new and original, it was withheld from our journals because it was thought that an isolated case, such as this one, would not prove interesting or important to the American allergists, especially in view of the commonly accepted theory that the pollen of cultivated plants like beans do not cause allergic symptoms." However, in 1929 I chanced to read several articles in the Italian literature describing a condition called "favismo," in which five fatal cases occurred. Realizing that an article on the fava bean would prove more valuable to physicians in southern Italy and Sicily, I submitted my paper to the *Rivista sanitaria siciliana*, which graciously published it last year. I am herewith enclosing a reprint of this paper. The paper was abstracted and published in the March, 1933, issue of the *Journal of Allergy*.

Judging from the text of the paper by Drs McCrae and Ullery, it does not occur to me that the doctors are actively engaged in the practice of allergy. It would add substantially to our knowledge of the case if the patient had had proper skin

tests made. For example, they spoke of making intradermal skin tests using 1 cc of the bean extract. It is not practical to use more than 0.01 to 0.03 cc for intradermal testing.

My purpose in this communication is not so much to establish the priority to the discovery that the pollen of this bean is the exciting cause of these severe allergic cases but more to stimulate further study and observation in so called cases of favism.

In the states of Louisiana and California and also in Canada, where the bean is cultivated to a certain extent, there must be other cases of hypersensitiveness which have not been reported because the physician never associated the pollen of the bean with the cause of the many clinical manifestations of allergy.

SALVATORE J PARLATO, M D, Buffalo

THE AMERICAN MEDICAL ASSOCIATION

To the Editor—Here is an early prophetic reference to the American Medical Association, found in "Physician and Patient, or, A Practical View of the Mutual Duties, Relations and Interests of the Medical Profession and the Community," by Worthington Hooker, M D, published in 1849. The reference is found in the chapter on "Means of Removing Quackery."

The sensible and influential in the community can render effectual aid in the overthrow of quackery by promoting the strict observance of the rules of medical intercourse. These rules are not officially understood and appreciated by the public. If they were those who have influence in society would frown down the base arts of a cunning competition instead of encouraging them as they now often do and would give no countenance to the false issues upon which empirics and dishonorable physicians so much depend for their success. For a full view of this subject I refer my readers to the chapter on the Intercourse of Physicians.

A recent movement of the medical profession in this country, if I may take note is destined to exert a great and a permanent agency in the overthrow of empiricism. I refer to the formation of the American Medical Association in 1847. Although the meeting in Boston in May 1847 was only the second annual meeting of the Association so fully did the profession throughout the country respond to the call that the number of the delegates amounted to about four hundred and fifty. The measures which have already been entered upon and the spirit which has been manifested clearly indicate that the great object for which the Association was formed—the elevation and advancement of our common calling—will be rigorously and steadily prosecuted. The recurrence of this festival of the profession from year to year I fully believe will be marked by real advances in all the interests of medical science.

And now I ask is it too much to expect of the stable and well informed in the community that they will give their countenance to the objects at which we aim? While we are thus struggling together to elevate the standard of medical education and to rid our noble profession of the abuses which impair its honor and its usefulness we have a right to demand of the community which is to be especially benefited by these efforts a cheerful and active support. Whether this shall be given us will depend upon the men of influence in every profession and occupation in our land. It is to them that we make our appeal and we believe that it will not be made in vain.

P I NIXON, M D San Antonio, Texas

DE KRUIF WRITES ON PNEUMOTHORAX

To the Editor—In his address as retiring president of the American College of Surgeons, Dr C Jeff Miller (Medical Men and Their Lay Critics *Surg Gynec & Obst* 54 391 [Feb] 1932) quoted Kipling's statement that "doctors always have been and always will be exposed to the contempt of the gifted amateur, the gentleman who knows by intuition every thing that it has taken them years to learn." Dr Miller further charges that "it has perhaps been easier for our traducers to gain a hearing than it has been for our defenders."

In the *Ladies Home Journal* for November, 1933, these two statements are abundantly confirmed. Paul de Kruif's article "Why Should They Go On Dying?" is a veritable storehouse of misinformation and vilification of the medical profession, as any doctor can see by securing a copy of the magazine and reading it for himself. Briefly, de Kruif had just heard of the collapse therapy of tuberculosis and, in the excitement of his discovery, thinks that because it is useful in some cases of tuberculosis it should be used in all and will save every case if used in time. He charges the medical profession with

"cowardice ignorance or neglect" (his exact words) because they neglect this life-saving procedure and names only seven places in the United States where it may be obtained—although it has been used in North Carolina since 1913 and there are at least fifteen institutions and twenty-five private practitioners in our state using it as a routine

In righteous indignation, I wrote a brief letter of protest to the *Ladies' Home Journal* correcting the most glaring of de Kruif's false statements, and offered it 'without money and without price' to its editor—but he coldly declined it

The late Mr Curtis, the founder of the company that publishes the *Ladies' Home Journal*, gave to the Jefferson Medical College the magnificent Curtis Clinic, which is perhaps the finest building of its kind in the world. Its purpose is to serve humanity, and it is manned by the same medical profession that is so often vilified by such 'gifted amateurs' as de Kruif in the columns of the *Ladies' Home Journal*. I wonder if the policy of the present editor of that magazine would be approved by his dead benefactor

WINGATE M JOHNSON M D, Winston-Salem, N C

VOMITING AND SPINAL ANESTHESIA

To the Editor—At the Shamokin State Hospital we have been using spinal anesthesia for the past four years (procaine hydrochloride) we consider it the ideal method obstetrics included below the diaphragm. We have given 2,000 spinal anesthetics without any fatality, but vomiting occurs almost instantly, particularly in appendectomies when either a hemostat or a ligature is put on the meso-appendix. However, we have changed our technique and before we put either a hemostat or a ligature on the meso-appendix we block the nerves in the meso-appendix with 0.5 per cent procaine hydrochloride and find that vomiting does not occur. This, I believe, is due to the following

1 The autonomic nervous system of Langley, formed by Gaskell's nerves from the anterior horns of the spinal cord to the great sympathetic ganglions with the vagus and the pelvic nerve, forms the great thoracic and abdominal nerve plexuses and gives the appendix its nerve supply. We have learned only recently that these nerve fibers are also nerves of sensation.

2 Since the appendix is the only organ in the abdomen having such a well developed nervous system, irritation of this organ is considered a definite indication of chronic appendicitis (Denver, J B. Appendicitis in the *Cyclopedia of Medicine*, p 740)

The nerves of the meso appendix have no name. Therefore I suggest that they be called Deavers (J B) nerves.

GEORGE W REFSE M D Shamokin, Pa
Surgeon in Chief and Superintendent
Shamokin State Hospital

SPINAL ANESTHESIA IN HYPERTENSION

To the Editor—Dr Albert S Hyman (*THE JOURNAL* October 25 p 1410) presents a preliminary statement on the therapeutic use of spinal anesthesia for emergency relief in certain type of hypertension. He says that the depressor effect obtained by spinal anesthesia might be of value when a sudden dropping of the systolic pressure is to be desired and cites a case in which emergency in imminent cerebral hemorrhage was forestalled by such treatment. He concludes that in cases of extreme hypertension exhibiting prodromal signs of coming apoplexy and with relative grades of tension spinal anesthesia may be life saving.

On the other hand, Dr Stanley Cobb (*The Cerebral Circulation* XXV Remarks on Clinical Physiology *Ann Int Med* 7 299 [Sept] 1933) refers to an article which presents "a strong case for the theory that lowering blood pressure in patients with hypertension and arteriosclerosis may bring on attacks of hemiplegia and aphasia" (Fleming, H W, and Naffziger C H. Physiology and Treatment of Transient Hemiplegia, *THE JOURNAL*, Oct 29, 1927, p 1484). Cobb adds

I have seen several cases where such accidents have occurred after putting arteriosclerotic patients to bed and allowing a systolic pressure to fall from around 220 to about 160 reducing the blood supply to an already poorly oxygenated brain. Moreover pressure on the carotid sinus causes a sudden fall in blood pressure in some people and I have seen arteriosclerotic patients in whom such a fall brought on sudden syncope with convulsive movements.

It would seem, because of these diametrically opposed views, that the advisability of lowering the blood pressure in the manner advocated by Dr Hyman is still considerably *sub judice*.

LOUIS J BRAGMAN, M D, Syracuse, N Y

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

DURATION OF GESTATION

To the Editor—I recently had occasion to look up the minimal and maximal length of the human gestation period. In De Lee's *Obstetrics* the observation is made that Dr Reichert of Germany has a theory stating that gestation may be complete in 252 days. Is this considered authentic? Please omit name.

M D, Pennsylvania.

ANSWER—"By the normal end of pregnancy is meant the time at which a normally developed fetus is ordinarily expelled during the process of labor" (Zangemeister). This time, reckoned from the first day of the last menstruation is accepted as 280 days, calculated from the day of conception, it is 273 days. The exact duration of gestation, that is, from the time the spermatozoon and ovum unite until labor sets in, is not definitely known. However, it is assumed that fertilization takes place on an average about 154 days after the beginning of the last menstrual period. Hence the average duration of pregnancy is 280 less 154 or 264.6 days. In spite of this daily experience shows that mature babies are born some time before and after this average number of days. In a series of 187 carefully controlled pregnancies that followed the return of German husbands on furlough during the World War, Nürnberg found that mature children were born between 266 and 282 days after conception in 68.26 per cent between 258 and 290 days in 95.46 per cent and between 250 and 298 days in 99.74 per cent. Since in only 0.26 per cent of the cases were mature children born before the two hundred and fiftieth day or after the two hundred and ninety-eighth day, a pregnancy may be considered abnormally short if it lasts less than 250 days and abnormally long if it persists more than 298 days. In Germany however, the law defines the duration of pregnancy as the period extending from the one hundred and eighty-first to the three hundred and second day before the birth of the child. However the minimum figure in this law, namely, 181 days after conception, indicates only the period of viability and not the maturity of a child. The French law recognizes the legitimacy of a child born 180 days after marriage and 300 days after the death of the husband (De Lee).

It is assumed that the inquirer would like to know whether a mature child can be born after 252 days of pregnancy. The statement gestation may be complete refers to a period of time whereas maturity deals with a state of development. It is possible for a child to be born after 252 days and show all or most of the signs of children that are normally born at the end of 280 days. According to Haberdar children may be born 238 days after conception and show all the signs of maturity. On the other hand children born after the usual 280 days of gestation may not be entirely mature. The best examples of this are the cases of twin pregnancies in which one child is mature and the other is much shorter in length, weighs considerably less and has definite characteristics of immaturity.

DIFFERENTIATION OF EDEMA FLUIDS

To the Editor—How may the edema fluids in cardiac nephritic and nephrotic patients be differentiated by their protein content? Please omit name

M D Massachusetts

ANSWER—A comparison of the results obtained in the chemical analysis of different effusions shows that they vary according to location and according to the disease in which they are produced

The proportion of protein in edematous fluids in different localities varies in decreasing order as follows (1) pleura, (2) peritoneum, (3) cerebrospinal, and (4) subcutaneous. Apparently there is a variation in the capillary permeability in these different parts of the body the pleural vessels being most permeable to protein and the subcutaneous vessels least permeable of the four

In general noninflammatory edemas (transudates) contain much less protein than do the inflammatory exudates. Non-inflammatory subcutaneous effusions have usually a protein content of from 0.1 to 0.2 Gm for each hundred cubic centimeters. There is more globulin in nephritic than in cardiac dropsy

Epstein found that the subcutaneous fluids are totally different in their composition from the abdominal or pleural fluids. The cutaneous effusions are characterized by a very low protein content and a small amount of incoagulable nitrogen. Of the protein present in these fluids the globulin constitutes the greater proportion. In the mixed cardio-nephritic fluids the ratio of globulin to albumin is lower than in normal blood serum, but when compared with the blood serums of cardio-nephritic cases there appears to be a certain parallelism

The effusions in serous cavities have a higher protein content than the subcutaneous. The highest values are found in the pleural fluids, in which the protein content is almost the same as that in normal blood serum. The incoagulable nitrogen in these fluids is low. The abdominal fluids are in general less rich in protein than the pleural effusions. Those of cardiac origin give the highest protein values. In fluid of nephritic origin the protein content is usually low, about 0.1, the borderline between transudate and exudate in protein content. Cases of true uncomplicated nephrosis are rare. The effusion in nephrosis is usually extremely low in specific gravity and protein content. The blood proteins are greatly reduced in nephrosis. This reduction is due chiefly to loss of albumin so that the globulin is relatively increased. In lipid nephrosis the total blood protein may be as low as 3.9 per cent, of which albumin is 0.5 per cent and globulin 3.4 per cent

TREATMENT OF BURNS

To the Editor—About February 18 I saw a patient suffering from burns of both legs extending up to the knees received while stepping in cement. The burns varied from the second to the third degree. The process of healing was slow and unsatisfactory. Trinitrophenol solution tannic acid solution trinitrophenol ointment and balsam of peru were all tried to aid the process of healing. At times each seemed to be of benefit and then again seemed to be without benefit. The areas healed over with a thin pinkish skin with a small amount of keloid formation along the edges. This new skin remained soft pink and tender for some few weeks and did not respond to treatment. Infra-red treatments were instituted and the skin soon assumed a normal appearance. With sudden changes of weather the patient experiences pains in the legs and a discoloration of the burned areas. In walking long distances or exercising the legs the patient complains of a pulling sensation within the muscles of the leg. This is an industrial case. I would appreciate any information that you can send me that will help me to determine the amount of disability or any suggestions that may be of benefit to the patient and also what the patient may expect in the future as a result of these concrete burns. Will the leg tendons atrophy or will they remain as is? If this is published in THE JOURNAL please omit name

M D, Oklahoma

ANSWER—From the description given it is assumed that skin grafting was not necessary and that there is no interference of motion at the knee or the ankle. This would indicate that the deeper layers of the skin and the underlying tissues were not destroyed. It is probable that scar tissue formation will not grow worse, and there is little likelihood of further limitation of muscular activity as a result. The circulatory disturbance described may be improved by systematic exercises such as Buerger's exercises, or by the wearing of an elastic bandage. It is stated that the skin is of normal appearance, so it is assumed that excessive keloid formation is not present

Determination of disability depends on objective observations and a determination of the subjective elements in which the various factors, such as the patient's personality must be considered. For the purpose of financial settlement, disability following injuries to the leg are based on disability at the knee joint. In some states, total disability at the knee such as that

following amputation, is established at 42.5 per cent of complete permanent disability. It might be established, for instance, that this individual is suffering from a 5 to 10 per cent disability at each knee

ARTERIOSCLEROSIS IN DIABETES

To the Editor—My mother has had diabetes for eight years and at present is receiving insulin daily. For the past few months she has been having excruciating pain in the lower part of both lower extremities. She is unable to walk a street block without great discomfort. Can you suggest any treatment physical therapy or other? Would infra-red rays help any? Any information you care to send will be greatly appreciated. Please omit name

M D New York

ANSWER—From the description, the patient is apparently suffering from a restricted blood supply through the lower limbs caused by the rapidly advancing arteriosclerosis typical of diabetes. There may also be an element of vasospasm complicating the picture

The treatment for this condition is similar to that for Buerger's disease except that it is somewhat more conservative. Buerger's exercises for one hour twice daily followed by half an hour of contrast baths would probably be of benefit. Diathermy to both extremities may also help. This should be done with a plate under the anterior part of the foot and a cuff around the calf muscles. It may be applied to the two extremities at once for about one hour daily

If further treatment is required, intravenous therapy may be tried. If vasospasm is present typhoid vaccine is worth trying. One should begin with 24 million organisms intravenously once a week. If no vasospasm is present, one may use from 200 to 300 cc of hypertonic saline solution (5 per cent) intravenously every second day

It is not likely that infra-red ray therapy would be of any value

An article by Samuel Perlow entitled "Diagnosis and Treatment of Thrombo-Angitis Obliterans" in the July issue of *Annals of Surgery* contains an excellent exposition of this subject and a useful bibliography

SMALLPOX VACCINATION

To the Editor—My associates and I have had a good many vaccinations to do here lately and my attention has been called frequently to reports that vaccination is being done by hypodermic injection. On inquiry from one of my medical friends I learn that he has used this method for a number of years. He dilutes the vaccine contained in a tube with 1 cc of sterile water and injects part or the whole of it hypodermically. Kindly advise me as to the advantages and disadvantages of this method. I note that it is not advised in the literature of the manufacturers with whose products I am familiar. Please omit name.

M D, Colorado

ANSWER—The hypodermic method of vaccination is regarded as objectionable since satisfactory results are obtained from the method in which the virus is implanted in the skin without resort to subcutaneous injection, and it is believed that it is undesirable to inject hypodermically material which may be infected with organisms other than that of the vaccine. This method has the disadvantage of not leaving a scar as evidence of a successful take

We know of no advantage of such a method as is described, in which the vaccine is diluted with 1 cc of sterilized water and injected hypodermically

The multiple pressure method by which the vaccine is introduced subepithelially by means of a sharp pointed needle is regarded as perhaps the most satisfactory method available

DYNAMITE HEAD OR GLYCERYL TRINITRATE (NITROGLYCERIN) POISONING

To the Editor—Patients handling dynamite in the bureau of mines frequently claim so called headache. This is evidently due to the nitroglycerin. Please let me know if you have any suggestion of treatment as to the causes of these conditions

MILTON MERMELESTEIN M D McKeesport Pa

ANSWER—This well known condition is familiarly called "dynamite head." These headaches are real and at times severe. Associated with the headache there may be rapid heart beat and flushing of the face, now and then temporary blindness occurs. Gastric disturbances are frequent

Certain mine explosives, such as nitro starch, are said to cause no disturbances of this character

Apparently a tolerance for glyceryl trinitrate (nitroglycerin) is developed in some exposed workers, so long as they are continually, or frequently, in contact with it and so long as exposure is not excessive. After weekends, vacations or other absences from the point of exposure, the headaches are prone to recur

The imbibing of alcohol increases the probability of the development of "dynamite head." Likewise, alcohol increases the severity of the attack once it is inaugurated.

In order to preserve their "tolerance," some dynamite workers carry about their persons minute fragments of this substance. Children and others in the homes of dynamite workers occasionally develop headache and other manifestations, as the result of the action of dynamite particles accidentally or purposely placed in the clothing of these workers.

The analgesics commonly used to relieve the pain of headache are ordinarily without helpful influence in this abnormal state. This condition is well discussed in Dr. Hamilton's book, *Industrial Poisons in the United States*, New York: the Macmillan Company, 1929, which contains a brief summary of the literature on this topic.

ALLERGIC TESTS IN PATIENT WITH ARRESTED TUBERCULOSIS

To the Editor—In an arrested case of tuberculosis is it safe to give the patient the skin tests for allergy? I say arrested advisedly, because the condition probably is still active. The patient's temperature is now normal but she fails to gain in weight is coughing and has not gained in strength. Within the last two months she apparently has developed asthma at least so the sounds in the chest appear. The chest will be perfectly quiet and without a word of warning an apparent asthmatic attack comes on. In an hour or so it will subside but as usual in all such cases returns. The patient is anxious to have the tests but I was fearful of going ahead with them because I have not had such a case presented before. Please omit name and address. M D, Illinois

ANSWER—Not only are skin tests for the asthma permissible but they are strongly advisable, because they may disclose information that will help the asthmatic condition and prevent a flaring up of the tuberculosis. There is no danger in doing skin tests on tuberculous individuals, however, scratch (cutaneous) tests are advised, at least at first, intracutaneous tests may then be carried out safely if the cutaneous tests are negative.

The combination of bronchial asthma with pulmonary tuberculosis is infrequent and brings up the thought that either the asthmatic symptoms in the patient may be due to a fibroid tuberculosis or bronchial asthma is the sole condition present, i. e., that the symptoms deemed tuberculous might have been from allergic bronchial asthma. History, examination, sputum search and roentgen examination of the chest should suffice to differentiate. If epinephrine hypodermically gives relief, bronchial asthma is strongly suggested.

KEROSENE POISONING

To the Editor—I am trying to get some information regarding kerosene poisoning. In a local hospital during the past five years there have been seventeen admissions of young children who drank kerosene. There were three deaths and several of the children were acutely ill with high temperature. Can you send me at your earliest convenience some information regarding kerosene poisoning or mail me references so I can look up the literature on this subject as I have been unable to find any so far.

C C McLEAN, M D Birmingham Ala

ANSWER—Much of the literature pertinent to kerosene poisoning appears under such heads as "gasoline poisoning," and "petroleum naphtha poisoning." The three substances implied may not act identically but at least they do act similarly. Four types of damage are known:

(a) Dermatitis which in part is the result of direct irritation, in part the result of the defatting action of these hydrocarbons, and in part the result of "sensitization."

(b) Acute poisoning from the inhalation of vapors which condition is characterized by cerebral disturbances, frequently termed "naphtha jags." Persons affected behave much like those mildly intoxicated by ethyl alcohol. Excitement is the predominant manifestation. Also in this state there may be disturbances of the digestive tract with nausea vomiting and diarrhea. Low grade inflammation of the respiratory tract is well known.

(c) An ill defined chronic state is believed to exist. This form of damage resembles multiple sclerosis plus evidences of damage to the liver which may result in icterus.

(d) The inhibition of any of these substances may lead to prompt severe injury with characteristic features suggesting impairment of various centers of the central nervous system plus profound shock.

The following sources may be consulted for additional information:

Henderson and Hayward, *Noxious Gases*, 1927.
Lee, in *Haime and Weber, Legal Medicine and Toxicology*, 1923.
U. S. Public Health Service, *Bureau of Hygiene Division*, Washington, D. C.
Dr. Ernest R. Hayden, 19, Concord Hall, Columbus, Ohio.

OPPENHEIM'S ACOUSTIC EPILEPSY

To the Editor—Can you give any information as to the condition known as Oppenheim's acoustic epilepsy? M D Conn

ANSWER—Oppenheim's acoustic epilepsy is described by Hermann Oppenheim in an article entitled *Kenntnis der Epilepsie, ihrer Randgebiete* (*Ztschr f d ges Neurol u Psychiat Orig* 33 352, 1918). There is also the following note in Alexander and Marburg's *Handbuch der Neurologie des Ohres*, Vienna, Urban & Schwarzenberg, 1928, vol II, part 1, p 554.

"2 Labyrinth Symptoms and Epilepsy. Hemispheric and epilepsy may exist together or the manifestations may be so closely allied that they present unusual difficulties in diagnosis. However, except for this combination, the distinction between these two diseases will not be difficult (Oppenheim). There is, therefore, a definite basis for associating epilepsy with vascular disturbances without considering epilepsy as a vascular disease."

In this paragraph reference is made to Oppenheim's *System of Neurology*. However, a study of this system fails to reveal anything more than a mention of the acoustic aura, a differential diagnosis between the aura and Meniere's syndrome and hemispheric.

CARBOHYDRATE IN INFANT FEEDING

To the Editor—What is the latest teaching as to the age when carbohydrate should be omitted from a child's milk and he be given just plain milk boiled? What can one do when the child, accustomed to the sweetening of the milk by the carbohydrate, refuses plain milk? Kindly omit name. M D, Vicksburg, Miss

ANSWER—Carbohydrate may be retained in the milk mixture until the child is from 12 to 14 months of age. The carbohydrate as used in infant feeding is a valuable addition to the diet, tends to regulate the bowels, and avoids what may be the present-day tendency to overfeed with cow's milk for too long a period.

THE MILK AND MOLASSES ENEMA

To the Editor—In *Tonics and Sedatives* in the issue of October 21 J H McM refers to an item of September 16 by Dr Boggess calling attention to the use of the milk and molasses enema. At first I was at a loss to see the point of the joke in this comment as I could not see the highly descriptive simile but at length it dawned on me what J H McM was driving at that gave him such a hearty laugh, so let's carry the fun a little further.

Now I want to defend Dr Boggess not only in his use of the milk and molasses enema but also in his English. When one sets himself up as a critic in the use of English as does J H McM he should set a good example in English himself. He calls this reference a simile. I am unable to see such a figure of speech. A simile is a comparison of dissimilar objects or things by the use of like or as. For instance we would say Washington stood as a mighty oak in the political storms of his day. Dr Boggess employs another legitimate rhetorical figure of speech known as metonymy in which one word does duty for another. For example we say that a man keeps a good table instead of a man keeps good food on his table. Now it is perfectly legitimate to say that Dr Senn brought back the efficacy of a milk and molasses enema. This is a metonymy in which the word "efficacy" does duty for the term "report of efficacy." The English language is full of such expressions and it is considered good usage.

Possibly the most benefit that may be derived from this friendly discussion is to call especial attention to the usefulness of this enema in cases of paralytic ileus or similar conditions in which other drugs and methods are found futile. I have seen gratifying results on various occasions when all other helpful remedies such as drugs, high soap suds enemas and double strength solution of pituitary have failed. In a recent case of hemiplegia in which I was associated all efforts to secure a bowel movement for eleven days following the stroke were unsuccessful. On the twelfth day the milk and molasses enema was employed resulting in immediate evacuation. Therefore it will be clearly understood why the recent discussions of August 19 September 16 and October 21 attracted my attention.

HUGH MILLER, M D Kansas City Mo

ALLERGY AND FEVER OF UNKNOWN ORIGIN

To the Editor—The answer to the question on Fever of Unknown Origin in Childhood in THE JOURNAL October 21 page 1336 fails to consider the possibility of food allergy. In fact this etiology is rarely if ever mentioned in any article on idiopathic fever. Various students of food allergy have emphasized the necessity of remembering that food sensitizations may be responsible for intermittent or prolonged elevation of temperature both in young and in adult life when other recognized causes of fever have been excluded or therapy based on such cause has failed to relieve the fever. The references and my personal experiences have been recorded in my book on *Food Allergy* (Philadelphia Lea & Febiger 1931) and since then further clinical confirmations have multiplied in regard to this cause. The patient's personal and family history may or may not be positive for allergy and evidence of food dislikes or disagreements may or may not be present. Elimination diets, modified by desensitization reactions and histories of food dislikes or dislikes, should be tried as a diagnostic procedure.

ALBERT H. ROWE, M D Oakland Calif

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA	Montgomery	Jan 9 13	Sec. Dr J N Baker	519 Dexter Ave	Montgomery
AMERICAN BOARD OF OPHTHALMOLOGY	Cleveland	June 11	Sec		
Dr William H Wilder	122 S Michigan Blvd				Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY	Cleveland	June 11	Sec		
Dr W P Wherry	1500 Medical Arts Bldg				Omaha
ARIZONA	Phoenix	Jan 23	Sec Dr J H Patterson	320 Security Bldg	Phoenix
COLORADO	Denver	Jan 2	Sec Dr Wm Whitridge	422 State Office Bldg	Denver
DISTRICT OF COLUMBIA	Washington	Jan 8 9	Sec Dr W C Fowler	203 District Bldg	Washington
HAWAII	Honolulu	Jan 8 11	Sec Dr James A Morgan	48 Young Bldg	Honolulu
ILLINOIS	Chicago	Jan 23 25	Supt of Regis Dept of Regis and Edu	Mr Eugene R Schwartz	Springfield
MINNESOTA	Basic Science	Minneapolis	Jan 23	Sec Dr J Charnley McKinley	126 Willard Hall University of Minnesota
apohis	Regular	Minneapolis	Jan 16 18	Sec Dr E J Engberg	350 St Peter St, St Paul
NATIONAL BOARD OF MEDICAL EXAMINERS	The examinations will be held at centers in the United States where there are five or more candidates Feb 14 16 May 7 9 June 25 27 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia				
NEBRASKA	Basic Science	Lincoln	Jan 9 10	Dir Bureau of Examining Boards	Mrs Clark Perkins State House Lincoln
NEW YORK	Albany Buffalo New York and Syracuse	Jan 29 Feb 1	Chief Professional Examinations Bureau	Mr Herbert J Hamilton	Room 315 Education Bldg Albany
NORTH DAKOTA	Grand Forks	Jan 2	Sec Dr G M Williamson	4 1/2 S 3rd St	Grand Forks
OREGON	Jan. 2-4	Sec., Dr Joseph T Wood	509 Selling Bldg		Portland
PENNSYLVANIA	Philadelphia	Jan 2 6	Sec Mr W M Denison	400 Education Bldg	Harrisburg
RHODE ISLAND	Providence	Jan 4 5	Dir Dr Lester A. Round	319 State Office Bldg	Providence
SOUTH DAKOTA	Pierre	Jan 16 17	Dir Dr Park B Jenkins	Pierre	
TENNESSEE	Memphis	Dec 21 22	Sec Dr H W Qualls	130 Madison Ave.	Memphis
WASHINGTON	Basic Science	Seattle	Jan 11 12	Regular	Seattle
Jan 15 16	Dir Mr Harry C Huse	Olympia			
WISCONSIN	Madison	Jan 9 11	Sec, Dr Robert E Flynn	401 Main St	LaCrosse

Rhode Island October Report

Dr Lester A Round, director, Public Health Commission, reports the written and practical examination held in Providence, Oct 5 6, 1933. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Fourteen candidates were examined, all of whom passed. Three physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1931)	80 1	
Georgetown University School of Medicine	(1933)	90 8*	
Tufts College Medical School	(1932)	81 5	83
Detroit College of Medicine and Surgery	(1929)	87 5	
St. Louis University School of Medicine	(1933)	84 4*	
Hahnemann Medical College and Hosp of Philadelphia	(1932)	81 1,	
84 7, (1933) 81 7 * 82 6 * 86 1 *			
University of Toronto Faculty of Medicine	(1925)	80	
Laval University Faculty of Medicine	(1925)	84 2	
McGill University Faculty of Medicine	(1931)	84 3	
College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Boston University School of Medicine	(1932)	N B M Ex	
Cornell University Medical College	(1927)	N B M Ex	
University of Toronto Faculty of Medicine	(1930)	N B M Ex	

* License withheld pending completion of internship

California Reciprocity and Endorsement Report

Dr Charles B Pinkham, secretary, Board of Medical Examiners of the State of California, reports 19 physicians licensed by reciprocity and 5 physicians licensed by endorsement from Sept 6 to Oct 25, 1933. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1932)	Colorado	
Northwestern University Medical School	(1928)	Missouri	
Rush Medical College	(1928)	Illinois	
University of Illinois College of Medicine	(1926)	New York	
(1931) Illinois			
Indiana University School of Medicine	(1932)	Indiana	
University of Maryland School of Medicine and College of Physicians and Surgeons	(1932)	Maryland	

Tufts College Medical School	(1927)	Michigan
University of Michigan Medical School	(1927)	Michigan
University of Minnesota Medical School	(1928)	Minnesota
St. Louis College of Physicians and Surgeons	(1895)	Utah
Creighton University School of Medicine	(1924)	Nebraska
University of Nebraska College of Medicine	(1928)	Mississippi
University of Cincinnati College of Medicine (1922)	(1924)	Ohio
University of Pennsylvania School of Medicine	(1929)	Minnesota
University of Tennessee College of Medicine (1931)	(1932)	Tennessee
University of Alberta Faculty of Medicine	(1929)	Minnesota

College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists	(1931)	2) U S Navy	
Columbian University Medical Department D C	(1902)	U S Army	
Harvard University Medical School	(1894)	U S PHS	
Washington University School of Medicine	(1928)	N B M Ex	

Book Notices

Maternal Mortality and Morbidity. A Study of Their Problems. By J M Munro Kerr MD FRFPs FCOG Regius Professor of Midwifery University of Glasgow. Cloth Price \$8.25. 1p 38" with illustrations. Baltimore: William Wood & Company 1933.

Seldom does one find a book that is so full of useful information. This fact also makes the book difficult to describe. Unlike monographs on the subject, it contains a mass of statistics gathered in Great Britain and other countries, together with a great deal of general information on the subject of maternal mortality and morbidity, with a wise interpretation of both as they relate to conditions in actual practice and to the agencies committed to their improvement. It is most convenient to have all this knowledge put together in one handy volume with a well worked out table of contents and an excellent index. After a bird's eye view of the situation in Britain by the author, there is a general review of the conditions affecting mortality by Dr P L McKinley. The statistics of the maternal death rate are presented and the bearing that infections, operative procedures and abortion have on it is clearly presented. An intriguing chapter on maternal morbidity and subsequent disablement, by Donald MacIntyre, contains stimulating facts. The prevention of maternal mortality and morbidity and the various obstetric services, their design organization and staffing, are fully treated. Nowhere will the American student find a more comprehensive review of home or 'domiliary' obstetrics. After reading these chapters he will be rudely awakened and impressed, the results of home obstetrics are so good. Of most interest to Americans will be the attitude toward the midwife. Whereas in America we are trying to get rid of this profession, in Britain the midwife looms large in all the discussions, indeed, there is a most pronounced reactionary trend toward her employment. A full description cannot be given here, but the reader can gain an idea of the midwife's status in Britain from the statement that "no one can give the medical student better training in normal labor than the experienced midwife." Excellent chapters are devoted to a transport obstetric service and to the education of medical students in obstetrics and gynecology, in which a combination of the two disciplines is recommended. The ideal maternity hospital is described and architectural plans are submitted. One sees from these that the British still cling to the old notion of a delivery room as a somewhat improved bed chamber, while the operating amphitheater is regally furnished with surgical appurtenances. What will strike the reader with great astonishment is the demand that a maternity hospital should consist of "three separate blocks, separated by wide air passages, which is preferable to isolation in flats." The author demands "a clean block" a suspect block" and "a septic block unless provision for septic cases is made elsewhere." Thus this British authority is more meticulous than the most rabid American isolationist. Valuable instruction is given for the formation of a national maternity service and the book ends with an appendix which gives consideration to the topics of the toxemias of pregnancy and the relations of general medical practice to the medical curriculum. The results of the Queen's Institute of District Nursing are presented and they are most gratifying. National health insurance and maternity has not yet received the attention in this country that it has in Britain. This book demands a place on the reading table of every obstetrician and public health officer.

In the decomposition of salt and ionic actions, an interesting suggestion is made regarding the comparative actions of the chlorine, bromine and iodine ions. Chlorine is not oxidized, but has of course, and hydrochloric acids (hydrochloric) are therefore the latter have a strong oxidizing

actions and it is not correct to speak of anionic or ionic actions of iodine. For if there were merely ionic actions of these halogens iodide and bromide should act like the indifferent chloride which is not the case. It is considered that carbon dioxide of the body may provide high enough acidity to permit formation of hydroiodic acid. The newer concepts of chemical and dynamic cycles in muscular work and the peculiar iodoacetic action of Lundsgaard are reviewed. In cyanide poisoning sodium tetrathionate is a more powerful antidote than sodium thiosulphate. There is no mention of methylene blue and sodium nitrite which are now known to be superior. Treatment of this poisoning requires attention to two principles first mechanical and second chemical. For resuscitation mechanical respiration is to be kept up until the poison is detoxicated for detoxication intravenous injection of thiosulphate intramuscular injection of detoxin (a sulphur splitting albuminate) or intravenous injection of dextrose or oxantin (hydroxyacetone) according to the recent work of Forst.

Surprising doubtful or objectionable to most pharmacologists at least in this country will be the following statements in the book. Listed with oxidizing antiseptics is potassium chlorate which is stated to give off oxygen slowly in the body the detoxicating action of strontium thioacetate is superior to sodium thiosulphate action of salicylates is generally held to be etiotropic in rheumatic fever tribromethanol is an intravenous anesthetic for short operations mention of valerian and a number of commercial esters of valerianic acid as hypnotics veramon is a chemical union of barbitol and amiodopyrine which can act as such in the body mention of no less than twelve coronary vasodilators for use in angina pectoris the biggest surprise being yeast extract by mouth and others almost as surprising being adenylic acid kallikrein and related tissue products hypertonic sugar solution and digitalis glucosides but yohimbine and barbitals are perhaps more rational papaverine intravenously for migraine synephrine in asthma hay fever and hypotonus carbazole (metrazole) as an inhibitor of intestinal colic bronchial asthma and as an expectorant acetylsalicylic acid is not exactly the same thing, as aspirin as to melting point and composition according to commercial tests for which authority is cited rather extensive mention of trade marked products in the text though generally not without giving the chemical composition. Antisyphilitic remedies are discussed too briefly in view of their therapeutic importance. For instance mercury gets two pages, and bismuth only nine sentences not entirely acceptable with mere citation of papers by Masson and von Oettingen. The reason is that bismuth is not popular in Germany and Austria.

However, the matter which might be questioned, or objected to, in this book is comparatively small in amount and minor. Any weaknesses are greatly outweighed by many excellent features and by the active interest and preeminence in pharmacology of its authors, which gives it the weight of authority. This book is truly representative international in scope, impersonal, and eminently fair to all those who profess and are identified with pharmacology. It is exceedingly stimulating and leaves a favorable impression of the value and importance of pharmacology, which brings to mind some comments on this subject. Once a prominent pharmacologist was asked by a biochemist in this country "What is to become of pharmacology?" and was told by a prominent medical dean "There is hardly any such thing as pharmacology it is only biochemistry and therapeutics and we shall have the subject taught by a young man on patients in the wards." Some physiologists have said that pharmacology is only a branch of physiology and not only regret but even defy its separation. A prescription for these skeptics and pessimists is a tolerable familiarity with Meyer and Pick. Here they will find the really active and productive pharmacologic talent of this country, well recognized for its contributions to and achievements in one of the most progressive of the world's medical sciences today. A desk copy of this book is indispensable to every pharmacologist and researcher in medicine, and no physician, physiologist, biochemist or medical student should regard his library complete without it. It is to be hoped that Prof V E Henderson will again render this edition into English, for Meyer-Pick is really a great work, which should not escape those who cannot read it in the original.

The Occipito Posterior Position Its Mechanism and Treatment with a New Conception of the Role of the Pelvic Floor By Roland Beard M.C. M.B. B.S. Gynaecologist Adelaide Hospital. Paper. Price 3/6. Pp 36 with 4 illustrations. Adelaide F W Preece & Sons 1933.

This interesting monograph presents a somewhat new view on the mechanism and treatment of this condition based on an analysis of more than 3,000 cases from the Queen's Home in Adelaide, together with the author's study of the pelvic floor. His concept of the role of the pelvic floor in the mechanism of the occipitoposterior position is based on the fact that he divides the pelvic floor into two functional groups (1) projection group, iliooccygeus and ischiooccygeus, and (2) rotation group, the pubococcygeus of either side. He formulates a new law "With the lie longitudinal that portion of the presenting part which is related to the anterior segment the

pubococcygeal portion of the pelvic floor, rotates to the symphysis." He divides posterior positions into two groups the true occiput posterior, with the occiput at the sacro-iliac joint and the intermediate occiput position, with the occiput anterior to the sacro-iliac joint. He believes that these positions can be differentiated clinically and that, while descent of the head has significance, flexion plays no part. Failure to rotate is due to the pelvic floor function. He is further convinced that anterior rotation through three eighths of the circle is rare.

Medicolegal

Medical Practice Acts Notice and Opportunity to Be Heard Before Revocation of License, Moral Turpitude Defined—Tullidge was a licentiate of the state board of medical examiners of Florida. It was charged that he violated his oath when he applied for a license to practice medicine, in that he swore that he had never been convicted of a crime involving moral turpitude. He had been convicted by a court martial, it was alleged, of "scandalous conduct tending to the destruction of good morals," preferred against him when he was an assistant surgeon in the United States naval reserve force. The board fixed a time and place for a hearing on the charges. Without notice to Tullidge and without affording him an opportunity to be heard in his own defense, the board proceeded. It had before it a transcript of the evidence against Tullidge at the time of his trial by court martial, the finding of the judge advocate, and the sentence of the court martial, together with certain testimony having no relation to the present charges. Notwithstanding a request by counsel for a continuance, it having been shown that he was out of the state, that his address was unknown, and that he had never been personally served with a copy of the charges against him, the board peremptorily struck Tullidge's name from the roll of those licensed to practice medicine. Thereafter Tullidge instituted an original proceeding in the Supreme Court of Florida for a writ of mandamus to compel the board to restore his license and the Supreme Court allowed the board ten days within which to show why such a writ should not issue.¹ The board filed its answer contending that the members of the board were very busy men, needed at home by their patients, and that the evidence against Tullidge was so conclusive that no good purpose could have been served or different result reached had Tullidge been notified of the hearing and given an opportunity to resist the charges preferred against him.

All this may be true, said the Supreme Court, but the matter of depriving a person of his means of support should be considered seriously. The board of medical examiners is vested with this grave responsibility and is required to give due consideration to the rights of the accused before condemning him. The law prescribes specific requirements for doing this. If those requirements are not followed, the law is meaningless and is no longer a rule of conduct to govern the high and the low alike. We do not hold, said the court, that legal service cannot be made by registered mail or that the accused can ignore or run away from such service with impunity, but we do hold that the board has no right to proceed to the examination of a cause before it has positive proof that service has been made on the accused and reasonable time given him to employ counsel and to prepare his defense.

Tullidge contended that the charge on which his license was revoked was not warranted by law and that the charge of "scandalous conduct tending to the destruction of good morals" for which he was court-martialed was not a charge involving moral turpitude as contemplated by the law under which his license was revoked. Moral turpitude, said the court, involves the idea of inherent baseness or depravity in the private social relations or duties owed by man to man or by man to society. It has also been defined as anything done contrary to justice, honesty, principle or good morals. It often involves, however, the question of intent as when an act is unintentionally committed through error of judgment, when no wrong is contemplated.

¹ State ex rel Tullidge v Hollingsworth (Fla.) 138 So 37, abstr J A M A 99 588 (Aug 13) 1932

plated The question whether Tullidge might have defended himself on the ground that the charge on which his license was revoked was not warranted by law or that the offense for which he had been convicted by court-martial was not an offense involving moral turpitude was not, however, presented in such form as to authorize the Supreme Court to express an opinion Tullidge's petition for a writ of mandamus directing the board of medical examiners to restore his license was granted —*State ex rel Tullidge v Hollingsworth (Fla)*, 146 So 660

"Poisoning" in Relation to Insurance Construed.—The defendant insurance company insured the life of one Urian The policy provided for the payment of double indemnity to his widow if the death of the insured was caused by external violent and accidental means other than poisoning The insured accidentally inhaled carbon monoxide while working on his automobile and death followed His widow sued for the double benefits payable in event of accidental death, ignoring the provision of the policy that relieved the insurer of the payment of such increased benefits if accidental death resulted from poisoning Judgment was given in her favor and the insurer appealed to the Supreme Court of Pennsylvania

According to the trial court, ordinary persons, in using the word "poison," have in mind something taken into the stomach, not germ poisons, disease poisons nor gas poisons, the word "poisoning" was used in the policy to mean something taken through the mouth into the stomach, the parties making the contract did not contemplate poisoning by gas, and the word "poisoning" refers to a deliberate act, not to the taking of poison accidentally But with these conclusions of the trial court the Supreme Court did not agree According to the weight of authority, said the Supreme Court the taking of poison by accident or mistake is within the meaning of an exception relieving an insurer from liability as much as is the taking of poison by design, although some cases hold the contrary When an insurance policy is clear and unambiguous and names as a condition exempting the insurer from liability something that is simply a potential cause of injury or death, and makes no reference to any possible act or possible omission by the insured or any other person in relation to that cause, either intentional or unintentional, and when injury or death results from that cause, no recovery can be had under the policy, unless there is in it some other provision authorizing such recovery The judgment of the trial court in favor of the beneficiary was reversed so far as it required the payment of double benefits—*Urian v Scranton Life Ins Co (Pa)*, 165 A 21

Insurance Total Disability Defined.—The plaintiff sued the defendant insurance company on a policy which provided certain benefits if the plaintiff should suffer disability wholly preventing him from engaging in any business or occupation or performing any work for compensation The insurance company contended that even if the plaintiff was unable to perform his usual business he could not recover unless there was evidence that his disability prevented him from carrying on any kind of work for compensation Disability clauses said the Supreme Court of Arkansas do not define disability in such a way that the insured must become helpless before he can claim the benefits under them Such disability is meant as renders him unable to perform all the substantial and material acts of his business or the execution of them in the usual and customary way —*Guardian Life Ins Co v Johnson (Ark)* 57 S W (2d) 555

Evidence Admissibility of Statements Made by Examinee to Examining Physician.—A physician can testify as to symptoms and conditions of injury or disease made known to or discovered by him in treating his patient But when an injured person for the express purpose of qualifying a physician to testify in his behalf in a personal injury suit makes statements as to subjective pain and suffering not disclosed to the physician by other and independent means there exists both motive and opportunity for the patient to mislead or feign Under such circumstances the statements of the patient are clearly eliciting and hearsay and should not be admitted as evidence —*City of Dallas v Texas T S W (2d)* 207

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons Chicago Jan 8 10 Dr Philip Lewin 104 South Michigan Blvd Chicago, Secretary
Society of American Bacteriologists Philadelphia Dec 27 29 Dr James M Sherman Cornell University Ithaca N Y, Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Sixth Annual Meeting held in Chicago Oct 27 and 28 1933

The President DR M A BLANKENHORN, Cleveland, in the Chair

Food Sensitization Dermatoses (Eczema)

DR CLEVELAND J WHITE, Chicago Specific food or foods have been found to be of either primary or secondary etiologic importance in 128 out of 487 cases of so-called eczema Thirty-four were treated with the specific food propeptan It was of decided benefit in 85 per cent but of no value or produced an urticarial or symptomatic flare up in the remainder In this study the clinical manifestations of food sensitization dermatoses were reviewed and the importance of cutaneous food tests and elimination diets discussed

DISCUSSION

DR LEE FOSHAY, Cincinnati I should like to inquire whether propeptan is used only once and whether immediately after the exclusion of the sensitizing foods from the diet

DR CLEVELAND J WHITE, Chicago The propeptan therapy is well discussed in Urbach's book, which has been translated into English by Dr F M Schmidt of Chicago The specific food propeptan tablet is taken forty-five minutes before eating a portion of the food itself This amount is regulated by the presence of any eruption following this ingestion My criticism of the propeptan is the almost total ignorance of its method of preparation I believe that eventually we shall be able to prepare our own specific food peptones, thus making it economical enough to be used on a larger scale when such desensitization is necessary

Influence of the Liver on the Metabolism of Bile Acids

DR J L BOLLMAN Rochester Minn Bile acid excretion has been studied under several experimental conditions The excretion of bile acids in the bile collected by the external fistula of Rous and McMaster or by choledoco-ureterostomy is quite constant day by day It is little influenced by diet Almost quantitative recovery of bile acids administered by vein or by mouth is obtained within twenty-four hours Small amounts of certain toxic substances—chloroform carbon tetrachloride and tetrachlorethane—which specifically damage the liver cause a marked decrease in the excretion of bile acids without producing any other evidence of hepatic dysfunction Ligation of the common bile duct causes urinary excretion of bile acids in almost constant amounts daily This amount however, is only about half of that excreted by dogs with external biliary fistulas The normal animal appears to be able to destroy large amounts of bile acids, since large amounts may be fed over long periods without the appearance of bile acids in the urine or feces Bile acids fed or injected into animals with obstructive jaundice are only partly recovered in the urine After complete removal of the liver the administration of bile acids is followed by the excretion in the urine of the complete amount of bile acid given The liver appears to be the site of destruction of bile acids in the body Bile acids unlike bile pigment do not appear in the blood or urine following complete removal of the liver The significance of this fact is doubtful since there is a similar depression of bile acid formation following the performance of a biliary fistula or ligation of the common bile duct

DISCUSSION

DR M A BLANKENHORN Cleveland Dr Bollman answered the question that I would ask as to the aid in differentiating

intrahepatic and extrahepatic causes of jaundice. It has always appealed to me as a likely aid. I should like to ask Dr. Bollman whether or not in obstructed animals with the common duct tied, the feeding of bile salts has added to the intoxication that might be analogous to chloremia. That point comes up in the matter of the giving of ox-gall to patients. I should like to ask whether his work has made any contribution to that point.

DR G. O. BROWN, St. Louis. I should like to ask what method of extraction of blood was used to carry out the test for bile salts.

DR SIDNEY A. PORTIS, Chicago. I should like to ask Dr. Bollman whether coincidentally in his experiments of biliary fistula and the feeding of bile salts, he noticed any increase in the excretion of bile following the feeding of bile salts.

DR J. L. BOLLMAN, Rochester, Minn. In reference to the chairman's question about the feeding of bile salts having any effect on the clinical well being of the animal, I have given as much as 5 Gm. of sodium glycocholate daily to ordinary sized dogs and have observed no untoward effects. Even in animals with obstructive jaundice large amounts of bile salts appear to be without any deleterious effect. I know of no reason to anticipate serious consequences following bile salt administration in human beings. Dr. Brown asked about my method for determination of bile salts in the blood. Five cubic centimeters of blood is precipitated with eight volumes of alcohol and centrifugated. The supernatant fluid is evaporated to dryness and taken up in 10 cc. of alcohol. This is centrifugated and again evaporated to dryness. Sulphuric acid and furfural is added (Gregory method) and the mixture heated in a test tube at 65 degrees for thirty minutes. A definite blue color indicates the presence of bile salts. Normal blood gives no color. I have not been able to get the final solution clear enough for colorimetric comparison but have been able to match the unknown tubes with a series of standards prepared in the same way after the addition of different amounts of bile salts to normal blood. I have observed an increased flow of bile following administration of bile salts to animals with biliary fistula. Bile salts appear to be a fairly satisfactory chologogue. However this action is not always obtained. I would say, taking in a large number of experiments that perhaps one or two animals out of ten will fail to give an increased flow of bile following bile salt administration. I do not know why these animals at times fail to respond to this stimulus.

A Biochemical Study of the Size of the Liver and Spleen in Disease for Differential Diagnosis

DR MOSES BARRON, Minneapolis. This study consists of a careful statistical analysis of the weights of the liver and spleen as found in various diseases. A series of 16,000 post-mortem records covering a period of ten years from the department of pathology at the University of Minnesota Medical School was reviewed, from which there were chosen 312 cases of apparently normal adults killed suddenly from accidental causes. This group furnishes the normal weight standard. Another group of 489 cases is classified, in which there was also no abnormality found other than hemorrhage. This group shows the effect of hemorrhage on the weight of these organs. The principal study consists of a group of 5,843 cases subdivided into the various diseases, and the weights of the livers and spleens are presented so as to give the percentage of each group falling into various weight zones. It is found, for example, that leukemia gives the largest percentage of very large spleens with practically no spleen falling in the lower weight zones. Toxic goiters give almost as large spleens as amyloid disease. Carcinoma, both primary and secondary, and melanoma produce the largest livers, while malignant conditions that produce cachectic states result in the smallest livers and spleens. This study on a biometric basis is found to be superior to the simple statistical analysis made of the same group of cases (The Importance of Hepatomegaly and Splenomegaly in Differential Diagnosis, *Arch. Int. Med.* 50:240 [Aug.] 1932) and is a great aid in the differential diagnosis of many disease states.

DISCUSSION

DR JOHN FOULGER, Cincinnati. I wonder if Dr. Barron knows of Barcroft's work on the spleen of the dog, which showed that during pregnancy the spleen was greatly shrunken. How does Dr. Barron reconcile this fact with his results showing spleens in abortion cases to be about 30 per cent above normal size?

DR FREDRICK A. WILLIUS, Rochester, Minn. I should like to ask Dr. Barron whether in his studies of the weight and ranges of normal livers and spleens he has considered the height and weight of the individual.

DR MOSES BARRON, Minneapolis. The height and weight were not taken into consideration in this study. Another study is contemplated for this purpose. The present study simply shows the weights of liver and spleen for adults over 20 years of age, irrespective of their height or weight. In regard to the experiment cited relative to the size of the spleen in pregnancies I have no data on this particular phase. Our studies were on septic spleens following abortion, therefore it was not the pregnancy that influenced the size of the spleen but the associated septicemia. An interesting fact, however, is shown in this chart in that the spleens in cases of subacute bacterial endocarditis are definitely larger than those from simple septicemia. An enlarged spleen is therefore more characteristic of subacute endocarditis.

A Possible Relationship Between Antisyphilitic Treatment and Portal Cirrhosis

DR C. W. BALDRIDGE, Iowa City. In this study of portal cirrhosis every effort was made to include only undoubted cases. Thirty-six such cases were found in the records of the University Hospital for the past twelve years. In sixteen of these the diagnosis was confirmed by necropsy and in two others it was confirmed at operation. Fifteen of the thirty-six patients had syphilis. Of these fifteen patients with syphilis two had had no treatment, two may or may not have had treatment and eleven had treatment which in most instances was intensive. Active antisyphilitic treatment with mercury and arsphenamine was begun an average of six years before the patients were found to have portal cirrhosis, and the average duration of treatment with arsphenamine was more than two years. Four of the patients in whom cirrhosis followed antisyphilitic treatment used no alcohol at all (three were women) and only three used alcohol excessively and regularly. In one patient a minister's wife, who used no alcohol and who did not have syphilis, cirrhosis developed after antisyphilitic treatment. Circumstances that tend to incriminate the antisyphilitic treatment as the principal etiologic factor in the production of portal cirrhosis in most of the twelve cases in this series were studied.

DISCUSSION

DR E. G. WAKEFIELD, Rochester, Minn. I should like to ask Dr. Baldrige whether he studied the effects of repeated doses of the arsenicals or mercurials carried on over a long period of time to determine whether there were changes in the liver of a cirrhotic type.

DR C. W. BALDRIDGE, Iowa City. Arsphenamine does produce liver damage in animals (Craven, E. B. Jr. *Bull. Johns Hopkins Hosp.* 48:131 [March] 1931). The question comes up as to whether or not such damage will eventually result in cirrhosis or a lesion which is often called cirrhosis. If Mallory's classification is followed I believe that toxic cirrhosis will develop. I do not know that any of the animals have been followed long enough to develop a typical toxic cirrhosis, such as is seen in the human being.

The Urinary Excretion of Iodine in Toxic Goiter

DRS. GEORGE M. CURTIS and FRANCIS J. PHILLIPS, Columbus, Ohio. The normal urinary excretion of iodine of hospital patients in central Ohio ranges from 25 to 75 micrograms daily. It is at a normal range in patients with nontoxic nodular goiter and also in those with nontoxic diffuse colloid goiter. In patients with diffuse hyperplastic goiter with severe hyperthyroidism, it is greatly increased during the early exacerbation of untreated toxicity. It is increased during induced

hyperthyroidism and in patients with toxic nodular goiter. The urinary excretion of iodine rises immediately following thyroidectomy. The rise soon subsides. When iodine is administered quantitatively to patients with diffuse hyperplastic goiter with hyperthyroidism, the urinary excretion of iodine is low during the first few days. There ensues an increasing excretion of iodine as clinical improvement ensues. This is interpreted as due to the taking up of iodine by the depleted gland and tissues. The cyclic changes in the urinary excretion of iodine in women are accentuated in patients with toxic goiter.

DISCUSSION

DR H L ALT, Chicago. Is the urinary excretion of iodine increased in other conditions in which there is a high metabolic rate, such as leukemia or fever?

DR LOUIS LEITER, Chicago. I should like to ask whether or not in the case of hyperthyroidism following thyroid administration there was an increase of iodine in the urine. Also, what happens to the urinary excretion of iodine in a patient who has no hyperthyroidism at all but undergoes a major operation? And, from a theoretical standpoint, do the authors have any idea as to the basis of the therapeutic effects of iodine on hyperthyroidism when the blood is full of iodine and, apparently, the gland is unable to take it up from the blood?

DR W O THOMPSON, Chicago. I congratulate Drs Curtis and Phillips for making observations of fundamental importance. I notice that in normal individuals the iodine in the urine varied from 25 to 75 micrograms daily, a variation of 300 per cent. I wonder whether this variation might be accounted for largely by differences in the amounts of iodine in the food ingested.

DR WARREN B COOKSEY, Detroit. I wonder whether the authors have shown any correlation between the iodine content of the glands that were removed by thyroidectomy and the iodine content in urine and blood. A few years ago two of us in Detroit did some work in which we attempted biologically to assay thyroid glands that were removed at the operating table because of thyrotoxicosis. We fed these desiccated glands to tadpoles in order to ascertain what rate of metamorphosis would occur with the different specimens. We found absolutely no correlation between clinically toxic goiter and the iodine content of those glands as they were biologically assayed. In other words, the higher the iodine content according to the assay of thyroid extract, the greater stimulus to metamorphosis would be expected. That did not hold true, even in patients who had not been given compound solution of iodine. Some of the glands of very high iodine content stimulated metamorphosis much less than those of lower iodine content.

DR JOSEPH L MILLER, Chicago. There has been a recent report in the German literature on this problem and the results recorded are in accord with those of Drs Curtis and Phillips. They determined not only the iodine in the urine but the amount in the stool and the amount in the perspiration. This loss through these various channels may be so great immediately after a subtotal thyroidectomy that the organic iodine practically all disappears from the blood. This has raised the question of whether or not reaction that occurs after the operation may be due to a hypothyroxemia.

DR ROGER MORRIS, Cincinnati. I should like to ask the authors whether any observation has been made on patients presenting symptoms and physical signs of thyrotoxicosis when the metabolic rate was normal or subnormal. In the last few years I have been interested in patients of this type. In the charts that were shown all the patients had a high rate. Is the iodine secretion similar in patients with increased metabolic rate and in patients with a normal rate who present symptoms and signs of thyrotoxicosis? It would be interesting to try to discover whether or not the metabolic rate and the iodine excretion run parallel.

DR G M CURTIS, Columbus, Ohio. We have investigated the iodine metabolism in one patient with goiter. More iodine is excreted in the urine than in the stool. Daily administration of 10 mg of iodine to patients with toxic goiter may increase the stool excretion to 300 micrograms a day whereas the urinary excretion may rise to 7 mg a day. In two patients

operated on for other causes than toxic goiter we have observed an increased postoperative urinary excretion of iodine. This increase is not so great as occurs in patients operated on for goiter. We find no direct correlation between the level of blood iodine and that of the basal metabolism in normal individuals in patients without thyroid disease or in patients with hyperthyroidism. An explanation of this may be drawn from the investigations of Sturm and of Lunde. They have shown that there are two forms of blood iodine, one alcohol insoluble and the other alcohol soluble. The alcohol-insoluble form may be the thyroid hormone. In regard to the instance of induced hyperthyroidism, there would appear to be no essential difference between giving so much desiccated thyroid by mouth and thyroid hypersecretion. We have estimated the amount of iodine in the 10 grains (0.65 Gm) of thyroid tablets as about 240 micrograms. The blood iodine is increased in patients with hyperthyroidism and yet amelioration of the symptoms ensues on iodination. This raises the iodine paradox, which is best explained by the work of Lunde. During iodination the alcohol insoluble form decreases, whereas the alcohol-soluble portion increases. The diffuse hyperplastic goiter is iodine poor. When iodine is administered, its iodine content increases. Microscopically, the gland presents a marked increase in colloid. Dr Thompson has pointed out the significance of the food iodine. The iodine content of the foods administered in the University Hospital is being determined. Certain of these contain more iodine than others. One microgram of iodine as desiccated thyroid accelerates tadpole metamorphosis. Iodine alone does not stimulate metamorphosis. We would point out that in lymphatic leukemia there is an elevation of the basal metabolism as in toxic goiter. There is a lymphocytosis as in toxic goiter and also a response to iodine. It was discovered by Sturm that in lymphatic leukemia there is an elevation of the blood iodine. We have confirmed this observation.

Calorigenic Effects of the Oral Administration of Thyroxine in Various Forms

DRS W O THOMPSON and P K THOMPSON, S B NADLER, PH D, DR S G TAYLOR III and L F N DICKIE, B S, Chicago. Observations have been made which show that contrary to the generally accepted opinion, thyroxine has a very definite effect on the basal metabolism when administered by mouth but that its effect varies greatly according to the form in which it is given. Compared with the effect of intravenous administration of an alkaline solution of thyroxine, the oral administration of pure thyroxine produces only about one one hundred-and-fiftieth as much effect, while that of the monosodium salt produces about one fourth as much effect and that of an alkaline solution about two thirds as much effect. (When thyroxine is dissolved in an excess of sodium hydroxide, the disodium salt is presumably formed.) Single large doses of desiccated thyroid by mouth, suspended in distilled water, have, on the average, the same effect as doses of thyroxine in alkaline solution containing the same amount of iodine. However when desiccated thyroid is treated with a weak solution of sodium hydroxide, its effect may be enhanced in some instances. A peptide of thyroxine prepared by tryptic digestion of desiccated thyroid has less effect when administered orally, suspended in distilled water than thyroxine in alkaline solution, but when administered in a weak solution of sodium hydroxide it has an effect which at least equals that of thyroxine in the same form. From these observations it would appear that the effect of a thyroxine compound by the oral route depends on its solubility, and that solubility in turn is dependent as much on the formation of a soluble salt as on a peptide linkage. It is now possible to treat patients with myxedema almost as cheaply by the oral administration of thyroxine in suitable form as by desiccated thyroid.

DISCUSSION

DR JOHN FOLICER, Cincinnati. I should like to ask the authors whether they considered that a change in the optical properties of these amino acids particularly synthetic thyroxine, might occur in making a disodium salt solution. The authors perhaps remember the work of Cushny, which showed that optical activity and pharmacologic effect are closely related. It is quite possible that in treating synthetic thyroxine with

alkali one has considerably altered the internal properties of the compound, as would be shown by the measurement of the optical rotatory power of the initial and final product

DR W O THOMPSON, Chicago The thyroxine that we used was said by the manufacturers to be racemic, by which they meant that half of it was *d* thyroxine and half *l*-thyroxine. The thyroxine in the peptide was probably *l*-thyroxine. There are three different groups of observations which have a bearing on Dr Foulger's question. 1 Møller, Gram and Schou, and Thompson and his co-workers have found synthetic thyroxine and thyroxine as isolated from the thyroid gland by the method of Kendall (Squibb's thyroxine) to have about the same calorigenic action when injected intravenously in an alkaline solution, and the first observers have found the two to be the same spectrophotometrically. 2 Gaddum on the basis of experiments on four normal rats, concluded that *l*-thyroxine produced two and one-half times as much increase in oxygen consumption as *d*-thyroxine. 3 Salter, Lerman and Means noted that a polypeptide of thyroxine isolated from the thyroid by proteolytic digestion and presumably containing thyroxine in the levorotatory form, produced about the same increase in basal metabolism in man when injected intravenously as we had observed following the intravenous injection of Squibb's thyroxine in an alkaline solution.

Ammonia Excretion and Neutrality Regulation

DR A P BRIGGS, St Louis It has been observed with dogs following subcutaneous administration of potassium chloride the salt of a low threshold base and a threshold acid that there is a greater increase in the urinary excretion of fixed base than of mineral acid. With this presumptive acid excess in the tissues there is a decreased excretion of ammonia. From disodic sulphate the salt of a threshold base and a no threshold acid, opposite results were obtained, i. e., a greater increase in excretion of mineral acid than of fixed base and an increased excretion of ammonia with presumptive sodium residue in the tissues. These results seem incompatible with the prevalent belief that the stimulus which excites ammonia formation is increased acidity of the tissues. They are in harmony with the view that ammonia formation is stimulated by increased local acidity in the kidney tubules.

The Ultimate Fate of Damaged Glomeruli

DRS ALAN R MORITZ and J M HAYMAN, JR, Cleveland Human kidneys obtained at autopsy were injected with iron salts and an estimate of the total number of patent glomeruli was made by Kunkel's method. The sections for histologic examination were prepared from different portions of each injected kidney, and the proportion of injected and obliterated glomeruli was determined. From these two measurements the total number of glomeruli, including intact glomeruli and glomerular scars, was estimated and compared with the number of glomeruli in normal kidneys. It was found that in arteriolar nephrosclerosis and in chronic diffuse glomerular nephritis there has been a complete disappearance of as many as 50 per cent of the glomeruli.

DISCUSSION

DR R W SCOTT, Cleveland I should like to ask whether the authors have found any correlation between the number of fibrosed glomeruli and the clinical picture of uremia. Is the number of glomeruli different in individuals dying of uremia from inflammatory nephritis as compared to those dying in uremia from nephrosclerosis?

DR LOUIS LEITER, Chicago I should like to ask whether there was any correlation between renal function during life and the number of vanished glomeruli in those cases in which the sum of patent and obliterated glomeruli was significantly less than the average normal number of glomeruli.

DR J M HAYMAN, JR, Cleveland I think I can answer the first two questions. In chronic vascular disease and chronic nephritis there is a rough parallelism between reduction in the urea and creatinine tests of kidney function and the number of glomeruli. In these two diseases the patients usually do not go into uremia until the glomeruli have been reduced to 25 or 33 per cent of the normal number. There is another

type of uremia, that of prostatic obstruction or accompanying infection, in which the patient will have an approximately normal number of glomeruli, which under the microscope appear normal. In reply to Dr Scott's question about young persons with so called malignant nephrosclerosis who quite suddenly go into uremia, in this condition we did not find anything like as marked reduction in the number of glomeruli as in the chronic cases. But our estimations do not give us any measure of the amount of filter surface in the remaining glomeruli. In answer to Dr Leiter, any glomerulus that is injected at all must be counted as a glomerulus even though the filtering surface may be reduced.

A Case of Simmond's Disease (Cachexia Hypophyseopriva) with Recovery

DR CECIL STRIKER, Cincinnati A white girl aged 17 years whose weight on admission was 48 pounds (22 Kg) presented a basal metabolic rate of -48, flat dextrose tolerance and slight secondary anemia. A roentgenogram of the sella showed suggestive cystic degeneration. Roentgenograms of other bones showed marked calcium deficiency. The patient had been on a regimen of thyroid and ovarian extract prior to the examination without any improvement. She had very marked abdominal cramps with constipation and had a well marked cathartic addiction, taking as many as fifteen Feen-a-Mint tablets and three enemas daily without bloody diarrhea. She was placed on 1 cc of soluble extract from the anterior lobe of the pituitary hypodermically, daily, and continued on this for four months with very striking improvement. Examination shows that the patient now weighs 135 pounds (61 Kg), has been completely rehabilitated and is apparently cured of the intestinal condition.

DISCUSSION

DR JOSEPH L MILLER, Chicago I should like to ask the dosage of anterior pituitary. What did the roentgen examination of the colon show?

DR W O THOMPSON, Chicago I am interested in knowing whether this girl had starved herself before she was seen. I remember very well a girl who was similar to this patient. She was a schoolgirl of 17, who weighed 120 pounds (54 Kg). She had a sensitive nature and, because of the constant teasing of her companions in school about her plumpness began to diet. She gradually ate less and less until finally her appetite disappeared and her weight dropped to 65 pounds (29.5 Kg). Menstruation ceased and her metabolism dropped to minus 45 per cent. She was virtually skin and bones like the patient presented by Dr Striker. When she voluntarily increased her intake of food her weight promptly rose to 100 pounds (45 Kg). In view of the fact that the improvement in Dr Striker's patient persisted for six months after the administration of anterior pituitary was stopped, it would be particularly important to know just what the caloric intake was.

DR C C STURGIS, Ann Arbor, Mich I saw two cases which were reported from the University of Michigan. Neither case was treated with anterior pituitary. One case was reported in retrospect from the autopsy. The other patient was uncooperative and it was not possible to keep him under observation. This case was mistaken for myxedema and treated with thyroid extract without improvement and the patient then disappeared.

DR CECIL STRIKER, Cincinnati In answer to Dr Miller, the course of treatment consisted of daily injections of anterior pituitary for two months, then every other day for a month then once a week. She had a four months series of anterior pituitary and then none for six months. Unfortunately I cannot give the results of examination of the colon. She has moved away from the city but reports state that she is no longer addicted to cathartics. Regarding Dr Thompson's inquiry, I was interested in the same question. The patient had previously been on insulin and there was no increase in appetite following the insulin. There was no psychologic factor to be removed except the use of cathartics. Her environment has been practically the same during the entire course. She was put on a high vitamin B diet. The only factor in the course of treatment was the addition of anterior pituitary.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

3 89 124 (Sept.) 1933

Prophylaxis and Treatment of Infectious Diarrhea A A Walker Birmingham—p 89

Incidence of Mental and Nervous Manifestations in Internal Medicine Review of Three Hundred Cases H M Simpson Florence—p 94

Congenital Hypertrophic Pyloric Stenosis S L Ledbetter Jr Birmingham—p 97

Treatment of Habit Spasms by Psychotherapy C H Rice Montgomery—p 100

Lingual Thyroids Report of Case R C Hill York—p 103

Malaria as a Complication C M Franklin Union Springs—p 105

American Journal of Cancer, New York

19 1 258 (Sept.) 1933

*New Transplantable Tumor of the Rat Its Transplantability and Structure D P Seccof Cleveland—p 1

Extragenital Chorionepithelioma in the Male H G Heaney, Chicago—p 22

Multiple Hemangiomas Showing Certain Malignant Characteristics in an Infant Report of Case A C Taylor and Elizabeth Moore St Louis—p 31

The Abderhalden Reaction in the Diagnosis of Malignant Tumors M Sanchez Boston—p 49

Keratizing Embryonal Nephroma of the Kidneys of the Chicken W H Feldman and C Olson Jr Rochester Minn—p 47

Diagnosis and Treatment of Lesions of the Breast S W Harrington Rochester Minn—p 56

Bone Tumors General Practice Problem M C Mensor San Francisco—p 65

The Inheritance of Cancer in Man and Dog A Hunter—p 79

Real and False Progress in Cancer Research E B Krumbhaar Philadelphia—p 83

Transplantable Tumor of the Rat—Seccof describes a tumor that he has had under investigation since June, 1928. It appeared on the supra-orbital region of a rat and has been transplanted through nineteen generations taking in about 30 per cent of the transplants. It grows best in the peritoneal cavity. In structure it resembles a carcinoma but the type cell suggests that the tumor may belong to the endothelioma or myeloma group. Since the tumor was undifferentiated, the primary object has been to transplant it through as many generations as possible, in the hope that its structure might become more differentiated and identifiable from the standpoint of common nomenclature. To date the structure has remained unaltered and the exact nature is still unknown. While the transplantations were carried out observations and experiments were made on the influence of heredity, multiplicity of inoculations and cytologic variations in relation to takes. The author records the data on transmissibility and structure.

Abderhalden Reaction in Malignant Tumors—Sanchez made 228 Abderhalden tests with nine different types of substratum. 123 were positive, 62 negative, 20 uncertain and 23 without result. Counting all tests, even those with technical errors, the diagnostic accuracy is 72.3 per cent. Of the 131 tests made with serums from patients having malignant tumors, 107 were positive, 4 negative, 11 uncertain and 9 without result. Of the 97 tests made with serums from patients having other diseases or from normal persons, 16 were positive, 58 negative, 9 uncertain and 14 without result. Of 36 tests made with substratum 1, 15 were made with serums from malignant cases, of which 11 were positive, 3 uncertain and 2 gave no result, and the other 18 were made with serums from nonmalignant cases, 3 of which were positive, 10 negative and 5 gave no result. Without counting the uncertain reactions and those giving no results, the percentage of error is 11.5. Of 152 tests made with substratum 1 (mixture of carcinoma and sar-

coma) 88 were positive, 39 negative, 14 uncertain and 11 gave no result. Of 99 tests made with serums from malignant cases, 78 were positive, 1 negative, 6 uncertain and 6 gave no result. Of 61 tests made with serums from other patients and from normal persons, 10 were positive, 38 negative, 8 uncertain and 5 gave no result. One substratum D serum from a malignant case gave a negative result and 10 serums from other patients and normal persons gave positive results. In these 11 cases the test failed. Among the nonmalignant cases which gave positive results were 5 in which the clinical diagnoses were typhoid, epidemic (lethargic) encephalitis, respiratory infection, mastoiditis and pneumonia. In 5 cases a positive reaction was obtained at a time when the clinical diagnosis of the malignant condition was indefinite or negative. Later either the pathologic report or the surgical report proved the result of the blood test.

American Journal of Clinical Pathology, Baltimore

3 327 404 (Sept.) 1933

The Clinical Pathologist as Consultant and Teacher W M Simpson Dayton Ohio—p 327

Agglutinin Content of Blood Following Typhoid and Paratyphoid Immunization A G Foord and Anna Forsyth Pasadena Calif—p 333

Cholecystectomy as Seen by Surgical Pathologist Report of Two Hundred and Twenty Three Cases C W Myrland Pueblo Colo—p 339

Classification and Pathogenicity of Certain Monilias W D Stovall and S B Pessin Madison Wis—p 347

*Moniliasis of Lungs and Stomach Case Report with Autopsy S J Lewis Beaumont Texas—p 367

*New Method of Reticulocyte Enumeration E M Schleicher Detroit—p 375

Culture Medium for Rapid Growth of Pasteurella Tularensis L Fosbary Cincinnati—p 379

Three Notes on Biologic Stains A T Brice Jr Palo Alto Calif—p 381

Moniliasis of Lungs and Stomach—Lewis describes a fatal case of pulmonary and gastric (pyloric) moniliasis accompanying a pernicious-like anemia. The patient presented a clinical picture similar to that of advanced pulmonary tuberculosis. The copious sputum contained *Monilia albicans*, type II (Stovall), in large numbers. The monilia isolated was rather pathogenic for guinea-pigs, even after more than two years of artificial cultivation. Iodides by mouth did not stop the progress of the disease, perhaps owing to the late extensive involvement when treatment was begun. More frequent study of sputums is indicated for the purpose of detecting monilia and other fungus infections of the lungs. Monilia in sputum is a rather frequent finding and is perhaps more often a nonpathogenic secondary invader. The finding of monilia should not prevent a further search for other causes of pulmonary pathologic changes.

Reticulocyte Enumeration—Schleicher proposes a new method of reticulocyte enumeration. He places twenty five parts of solution A (1 Gm of neutral potassium oxalate, 0.85 Gm of sodium chloride and 100 cc of distilled water) to five parts of solution B (1 Gm of brilliant cresyl blue, 0.85 Gm of sodium chloride, 100 cc of distilled water and 1 Gm of chlorbutanol) in a conical tipped centrifuge tube to mix them and adds several drops of blood. After thorough mixing, he allows the solution to stand from ten to twenty minutes and then centrifugates it from twenty to thirty seconds at a moderate speed. The supernatant fluid is pipetted off until a layer of fluid approximately equal to the depth of the sediment remains. The sediment is mixed well with the supernatant liquid drawn up in the pipet and one drop is discharged near the end of a slide. The stained drop is spread with the edge of an 18 mm square coverslip and the film is drawn to about 6 cm from the starting point. The relative distribution of the reticulocytes is found by dividing a piece of paper into ten columns, adjusting a 4 X eyepiece to a tube length of 190 mm and using an oil immersion objective 18 mm by 95 numeric aperture 1.3. In order to obtain the specific microscopic working field, the relative distribution of the reticulocytes will usually show about four variations in concentrations: extremely high, high, low and extremely low or absent. The objective is placed on the upper edge of the film near the starting point, the slide is moved upward in a vertical line and several fields are counted that show the highest as well as the moderately high, moderately

low and low reticulocyte concentrations. The counts of each classification are recorded in column one. When the lower edge of the film is reached, the slide is moved to the left horizontally 0.5 cm, from this point the slide is moved downward and the reticulocyte concentrations are counted and recorded in column two. Ten vertical zones are counted in this manner. If a vertical zone does not show any reticulocyte, a zero is marked in the corresponding column. There will be found approximately 150 microscopic fields in a vertical zone, and the average field shows about forty erythrocytes. When the ten reticulocyte counts have been added, the total number is referred to as the sum of reticulocytes. In the same ten fields there are 400 erythrocytes. The ratio of reticulocytes to erythrocytes is therefore the sum of reticulocytes over 400. The percentage of reticulocytes is the sum of reticulocytes over 400×100 , or the percentage equals the sum of the reticulocytes $\times 0.25$.

American Journal of Hygiene, Baltimore

18 247-490 (Sept.) 1933

- Detection of Proteins of the Nematode *Hemonchus contortus* in the Serums of Infected Sheep and Goats J. E. Stumberg Princeton N. J.—p. 247
- Resistance to Infestation with *Trichinella spiralis* in Hogs. Eosinophilic and Precipitin Response G. W. Bachman and R. R. Molina San Juan P. R.—p. 266
- Host Fatigue and Feeding in Their Relation to Reproductive Activity of *Plasmodium cathemerium* Hartman G. H. Boyd Augusta Ga.—p. 295
- Yellow Fever Virus Encephalitis in Rodents W. Lloyd H. A. Penna Bahia Brazil South America and A. F. Mahaffy Lagos Nigeria Africa—p. 323
- Diversity of Types Found in Stock Cultures of *Streptococcus epidemicus* P. R. Edwards Lexington Ky.—p. 345
- Comparison of Certain Properties of Neurotropic Virus of Yellow Fever with Those of Corresponding Viscerotropic Virus M. Frohisher Jr. Bahia Brazil South America—p. 354
- Relation Between Vitamin A Metabolism and Susceptibility to Diphtheria Toxin C. C. Torrance Albany N. Y.—p. 375
- Serologic Diagnosis of Typhoid Carriers J. Wyllie Kingston Ont.—p. 393
- Effect of Emetine on *Endamoeba histolytica* in Culture J. H. St. John Manila P. I.—p. 414
- New Variety of Retortamonas (*Embradomonas*) Intestinalis from Man M. J. Hogue Philadelphia—p. 433
- Antigenic Properties of Bacteriophage Lysates of *Salmonella* *sepestris* V. Protection Tests with Rabbits General Resume Pearl Kendrick Baltimore and Grand Rapids Mich.—p. 442
- Epizootic Fox Encephalitis IV Intranuclear Inclusions R. G. Green M. S. Katter Minneapolis J. E. Shillinger and K. B. Hanson Washington D. C.—p. 462
- Studies on Benign Tertian Malaria III Absence of a Heterologous Tolerance to *Plasmodium vivax* M. F. Boyd Tallahassee Fla. and W. K. Stratman Thomas Jacksonville Fla.—p. 482
- Id. IV Refractoriness of Negroes to Inoculation with *Plasmodium vivax* M. F. Boyd Tallahassee Fla. and W. K. Stratman Thomas Jacksonville Fla.—p. 485

American Journal of Ophthalmology, St. Louis

16 669-758 (Aug.) 1933

- Continuous Circulation of Aqueous Humor M. U. Troncoso New York—p. 669
- Argyll Robertson Phenomenon in Multiple Sclerosis J. L. Abramson and M. H. Teitelbaum Brooklyn—p. 676
- Simulation and Ocular Hysteria C. Charlin Santiago Chile South America translated by H. Coghlan—p. 683
- Brilliance of an Object Seen Binocularly G. A. Fry and S. H. Bartley St. Louis—p. 687
- Recurrent Vitreous Hemorrhage J. M. Levitt Brooklyn—p. 693
- Entoptic Phenomena Observed in My Eyes Before and After Cataract Operations Coral Clark Wuchang China—p. 706
- Metastatic Carcinoma of the Choroid Report of Case P. DeLong Philadelphia—p. 712
- Medical Economics W. F. Hoffman Seattle—p. 716
- *Exophthalmos in Leukemia A. B. Reese and L. Guy New York—p. 718
- Cholesterol Crystals in the Anterior Chamber J. Fejer Budapest Hungary, translated by W. H. Crisp—p. 721

Exophthalmos in Leukemia—Reese and Guy report a case of lymphatic leukemia in which the ocular manifestations first led the patient to seek medical advice. The first manifestation in the sequence of events was a choroidal hemorrhage, with detachment of the retina in the left eye. Six days later an orbital hemorrhage with exophthalmos and a choroidal hemorrhage with detachment of the retina occurred on the right side. Five days later this was followed by an enormous expulsive hemorrhage in the orbit on the left side. This was of an extreme degree, the eyeball protruding beyond the palpebral aperture and literally lying on the cheek. The bulbar conjunctiva was pushed out and exuded sanguineous serum.

Because of the exposure of the eye and the resulting discomfort, an enucleation was done. At the time of the operation the orbit was found to be completely filled with blood and a microscopic examination of the globe showed the retinal detachment to be due to choroidal hemorrhage. The patient died on the fifteenth day.

American Review of Tuberculosis, New York

28 165-292 (Aug.) 1933

- Bilateral Phrenic Exeresis in Pulmonary Tuberculosis Report of Cas. H. Schwatt Spivak Colo.—p. 165
- Evaluation of Scalenotomy Accompanying Phrenic Evulsion A. L. Brown and Kathleen J. Atkinson San Francisco—p. 176
- Simplified Artificial Pneumothorax Apparatus W. M. Stockwell Hartford Conn.—p. 183
- Vileless Artificial Pneumothorax Syringe E. H. Lee, Tuskegee Ala.—p. 185
- Air Embolus Case Reports M. Pollak Peoria Ill.—p. 187
- *Prevention of Air Emboli in Artificial Pneumothorax Simple Protective Technic B. W. Cobbs Montgomery Ala.—p. 196
- Acute Pulmonary Atelectasis Following Hemoptysis Report of Case J. Rosenblatt Liberty N. Y.—p. 198
- Vitamin Therapy in Pulmonary Tuberculosis III Effect of Viosterol on Absorption Retention and Excretion of Calcium P. D. Cumm J. W. Strayer H. L. Watson and G. Heimann Evansville Ind.—p. 202
- Psychology of Tuberculosis C. B. Ross Cravenhurst Ont. Canada and W. S. Stanbury, Hamilton Ont. Canada—p. 217
- Tuberculo-phobia M. J. Breuer Lincoln Neb.—p. 229
- Tuberculous Pneumothorax in Infancy J. Greengard and I. R. Abrams Chicago—p. 246
- Study of Childhood Tuberculosis in Detroit Preliminary Report J. A. Johnston and H. D. Chadwick Detroit—p. 244
- Tuberculosis in Children Case Finding Methods and Results in Cattaraugus County New York J. H. Kornes Olean N. Y.—p. 251
- Tuberculosis in Girls and Young Women L. Arnold Chicago—p. 267
- *Cockroach as Possible Carrier of Tuberculosis H. C. Read Jr. Fort Smith Ark.—p. 267
- Tuberculosis of Human Origin in an Amazon Parrot W. R. Hinshaw Davis Calif.—p. 273
- *Technic for Estimating the Number of Tubercle Bacilli in Sputum J. Hughes Philadelphia—p. 279
- Use of Paper Films in Study of Tuberculous Enteritis C. J. Zimtheor Jr. Richmond Highlands Wash.—p. 289

Air Emboli and Artificial Pneumothorax—Cobbs, in his procedure for the prevention of air embolus developing during pneumothorax uses the Robinson type of machine and has the water level in the air bottle some 8 or 10 cm. higher than that in the pressure bottle. The procedure used is the reverse of that in giving a refill and the operating needle is fitted to the terminal connection. The stopcocks to the manometer and that controlling the flow of water between the bottles are opened. This starts the flow of water from the air bottle into the pressure bottle, with the consequent aspiration of air through the needle. With this condition established, the needle is pushed through the skin. The stopcock governing the flow of water between the two bottles is closed and the needle is carefully pushed deeper into the tissues. The parietal pleura is thus penetrated with a standing negative pressure in the needle of minus four or five. With the needle in a free space, the petcock between the two bottles is opened and during an initial compression there is, as a rule, sufficient negative pressure to draw the water from the pressure bottle into the air bottle, even with the water standing some 6 or 8 cm. higher in the air bottle. The author states that by using this technic there is no chance for an embolus even if the needle is in the lung or in a venule and that this modification is also of value when free full oscillation is not obtained, as there is no danger in opening the supply petcock while the point of the needle is adjusted or changed, seeking a full oscillation.

Cockroach as Possible Carrier of Tuberculosis—The experiments of Read show that the cockroach may be considered a possible mechanical carrier of tuberculosis, as (1) all smears of the intestinal tracts were positive, thus showing that the cockroach will eat positive tuberculous sputum, (2) these organisms when recovered from the intestinal tracts are viable, for they produced typical lesions in the guinea-pig, and (3) microscopic sections did not show the bacilli to be present in the tissues, thus showing that they remain in the intestinal tract. If tuberculosis patients and "carriers" do not properly dispose of their sputum, rags, handkerchiefs or paper expectorated into, the cockroaches may make a meal of this material and crawl away to the kitchen or pantry and thus contaminate the food. Kitchens and pantries of the neighbors may also be contaminated.

nated, because cockroaches have been known to migrate in a body from one house to another

Estimating Tubercle Bacilli in Sputum—Hughes devised a method for making a closely approximate estimate of the number of tubercle bacilli in a specimen of sputum, by obtaining a homogeneous distribution of bacilli throughout the specimen and counting the bacilli in a measured quantity (1 cmm) of the specimen. In preparing the specimen and smear, 1 cc of a 10 per cent solution of sodium hydroxide is pipetted into a 10 cc test tube and 2 cc of sputum is added, along with three glass beads. The mouth of the test tube is flamed and stoppered with a cork. The tube is placed in a shaking machine in a horizontal position and agitated. Because of the viscosity of the sputum the author has used pieces of ordinary glass tubing, 4 mm in diameter and 25 cm in length and graduated by a mark with a file to deliver 2 cc, instead of the usual type of pipet. Sputum can be readily drawn up into such a pipet by means of a Luer syringe attached to it by rubber tubing. After being digested and shaken for thirty minutes, the specimen is removed from the shaking machine and an area of 400 sq mm is marked off on the end of a 1 inch microscopic slide. This measurement introduces an error of less than 0.5 per cent. The slide is cleansed by being placed over night in a solution of 97 cc of alcohol and 3 cc of acetic acid. By means of a standard loop, one loopful of serum used to fix the bacilli to the slide and one loopful of the digested sputum are mixed together on the slide and are then spread in a uniform smear over the marked off area. The smear is dried in air, fixed by heat and stained by the usual Ziehl-Neelsen technic. Ten scattered oil immersion fields are examined and the average number of bacilli per field is estimated. This average is then corrected for the dilution of the sputum by sodium hydroxide by multiplying the number of bacilli seen per field by the factor 15.

Annals of Medical History, New York

5 409-510 (Sept.) 1933

- The Two Heberdens. William Heberden the Elder (1710-1801). William Heberden the Younger (1767-1845). H. Rolleston Haslemere Surrey, England.—p. 409.
Henry Ingersoll Bowditch. A. A. Walking Philadelphia.—p. 428.
An Account of Dr. Theodore Turquet de Mayerne's Praxis Medica Augsburg 1691. T. Gibson, Kingston Ont. Canada.—p. 438.
The De Ovarum Gallinaceorum Generationis Primo Exordio Progressus et Pulli Gallinacei Creationis Ordine' of Volcher Couter. Translated and edited with notes and introduction by H. B. Adelman. Ithaca N. Y.—p. 444.
Willard Parker. J. Ruhrich Baltimore.—p. 458.
Introduction to History of Women in Medicine. II. Medical Women of the Middle Ages. Kate Campbell Hurd Mead Haddam Conn.—p. 484.

Archives of Dermatology and Syphilology, Chicago

28 309-460 (Sept.) 1933

- Brief Review of Fever Therapy in Neurosyphilis. H. Beckman Milwaukee.—p. 309.
Bismuth Compounds in Treatment of Active Syphilis. Clinical and Laboratory Study of Two Hundred and Eighty Six Cases of Cutaneous Syphilis. S. Irgang, E. R. Alexander and A. M. Sala New York.—p. 320.
Diagnostic Value of the Organic Lutin Reaction. J. V. Ambler Denver.—p. 353.
Ameliasis Cutis. Report of Case. S. Crawford Pittsburgh.—p. 363.
Unusual Dermatoses Following Section of the Fifth Cranial Nerve. A. B. Loveman Ann Arbor Mich.—p. 369.
Extragenital Infection with Virus of Lymphogranuloma Inguinale. W. Curtis New York.—p. 376.
Anterior Lobe Pituitary Extract in Treatment of Alopecia. L. W. Lord Baltimore.—p. 381.
Purpura Annularis Telangiectodes. Report of Case with Autopsy. O. I. Levin and J. A. Tolmach New York.—p. 384.
Therapeutic Efficiency of Bismuth in Experimental Syphilis in Rabbits. Comparison with Arspenamine. G. W. Raiziss and Marie Severac Philadelphia.—p. 389.

Dermatosis After Section of Fifth Cranial Nerve—Loveman presents the history of a woman who nine months after a radical resection of the sensory root of the gasserian ganglion had two superficial 18 mm ulcers above the hair line in the posterior frontal area covered with a purulent necrotic slough. Trophic ulcerations trophic ulcers with a superimposed carcinomatous degeneration and a possible factitious dermatitis were the three clinical diagnostic possibilities. The fact that the lesions were so sharply limited to the anesthetic area were lateral and followed roughly the nerve distribution on males

a diagnosis of factitious dermatitis untenable. Furthermore, the fact that the condition responded to roentgen therapy and failed to recur adds to the improbability of such a diagnosis. Carcinoma was ruled out only after careful histologic studies. Large doses of roentgen rays were given because of the original opinion that the changes were epitheliomatous. In view of the previous damage to the nerve the superficial nature of the lesions and their zosteriform distribution, the author believes that atrophic disturbance best explains their occurrence. Just why the lesions responded so rapidly to roentgen therapy, he does not know.

Pituitary Extract in Treatment of Alopecia—Lord states that in a series of seventeen cases of alopecia treated with pituitary extract he has observed no evidence for or against the extract. He is sure that the study of a large series of cases of alopecia areata would reveal the fact that the average length of time required for the regrowth of hair varies between six months and a year. In the three patients whom he treated with the pituitary extract at the time of the appearance of Bengtson's article he found no evidence which might lead him to believe that the drug was of any value, and in three other patients who have since submitted to its administration the results have been such as to give him no cause for altering his view.

Bismuth Arspenamine Sulphonate in Rabbit Syphilis—The experiments of Raiziss and Severac revealed that the maximal tolerated dose of bismuth arspenamine sulphonate given intramuscularly to albino rats is from 450 to 500 mg per kilogram of body weight. This is an evidence of low toxicity. Fourteen syphilitic rabbits were cured by a single dose of bismuth arspenamine sulphonate, as judged by the method of popliteal node transfer. The minimal therapeutic dose was found to be from 10 to 15 mg per kilogram. When treated by ten weekly or twenty semiweekly injections of 3 mg of bismuth arspenamine sulphonate per kilogram, four animals were cured and three were not. Sixteen animals treated with higher doses were all cured. The minimal therapeutic dose for a series of twenty injections was found to be 4 mg per kilogram. The minimal therapeutic dose for a series of from ten to twenty injections was 5 mg per kilogram, and for a series of ten injections, 10 mg. The minimal effective single dose of arspenamine for a syphilitic rabbit, when given intravenously, was found to be from 16 to 18 mg per kilogram. The minimal effective single dose of arspenamine administered intramuscularly was 20 mg per kilogram. It appears, therefore that bismuth arspenamine sulphonate is as effective as arspenamine in experimental syphilis in rabbits.

Archives of Ophthalmology, Chicago

10 293-432 (Sept.) 1933

- Operative Treatment of Detachment of the Retina. Abstract of the Official Review Presented Before the International Ophthalmologic Congress Madrid Spain April 18 1933. A. Vogt Zurich Switzerland.—p. 293.
Operative Treatment of Chronic Glaucoma. Report of Two Hundred Successive Operations. A. Knapp New York.—p. 298.
Ocular Syphilis. IV. Interstitial Keratitis and Trauma. Clinical Experimental and Medicolegal Aspects. J. V. Klander Philadelphia.—p. 302.
Employment of a Conjunctival Bridge and Suture in Cataract Extraction. G. Slovic Ann Arbor Mich.—p. 329.
Ocular Lipid Histocytosis and Allied Storage Phenomena. P. Heath Detroit.—p. 342.
Herpes Corneae Occurring After Artificial Hyperpyrexia Induced by Diathermy. M. I. Berliner New York.—p. 365.
Relation of Ocular Sensitivity to Arthus Phenomenon in the Rabbit. E. L. Burk Baltimore.—p. 368.
Trachoma. Treatment with Chaulmoogra Oil. F. D. Kuznetsov, Perm U. S. S. R.—p. 375.

Herpes Corneae After Hyperpyrexia—Berliner reports two cases of chronic arthritis complicated by an ocular disturbance after artificial hyperpyrexia induced by diathermy. Physical therapists report that herpes labialis is not an uncommon sequela and generally appears within twenty four hours after treatment is instituted. In the cases reported the previous ocular and otolaryngologic histories were without significance. Any attempt made to explain the manifestation of herpes in these patients would naturally be speculative. Perhaps some persons harbor the virus of herpes in an inactive form in the body, and it may be that only a favorable stimulus such as fever is required to initiate an outbreak.

Journal of Pediatrics, St Louis

3 1264 (July) 1933

- Erythroblastosis in Icterus Gravis Neonatorum A F Abt Chicago—p 7
- Disappearing Time of Dyes Injected Intradermally S Amberg Rochester, Minn and R Nutting Duluth Minn—p 31
- Body Build in Infants with Acute Intestinal Intoxication H Bakwin and Ruth Morris Bakwin New York—p 36
- Acrolymia Note on Pathologic Physiology K D Blackfan and C F McKhann Boston—p 45
- Role of Erythrocyte Fragmentation in Genesis of Anemia T B Cooley and Pearl Lee Detroit—p 55
- Pediatrics What Is It? W C Davison Durham N C—p 64
- Serum Proteins and Lipoids in Eczema of Infants and Children H K Faber and Dorothy B Roberts San Francisco—p 78
- Intracellular Fluid Loss in Diarrheal Disease A M Butler C F McKhann and J I Gamble with assistance of Pauline Marsh Boston—p 84
- *Observations on Effect of Aging on Potency of Spray Dried Antiscorbutic Material H J Gerstenberger, Donald N Smith and G I Hacker Cleveland—p 93
- Diphtheria Immunization with Concentrated Toxoid Intradermally A Goldbloom and D L Klein Montreal Canada—p 112
- Myelophthisis H M Greenwald, Brooklyn—p 117
- Fetal and Neonatal Mortality C G Grulice Chicago—p 132
- Renal Changes in the Rabbit Resulting from Intravenous Injection of Hypertonic Solution of Sucrose H F Helmholtz Rochester Minn—p 144
- *Familial Retardation in Ossification of the Carpal Centers A F Hess and H Abramson, New York—p 158
- Alimentary Toxicosis S Karelitz New York—p 166
- Measles in New Born Infants (Maternal Infection) J L Kohn New York—p 176
- Observations on Nature and Treatment of Diarrhea and Associated Systemic Disturbances W M Marriott A F Hartmann and M J E Senn St Louis—p 181
- Note on Pathogenesis of Renal Rickets Derangements of Calcium and Phosphorus Metabolism in Nephritis A G Mitchell and G M Guest, Cincinnati—p 192
- Alleged Correlation Between the Rate of Growth of the Suckling and the Composition of the Milk of the Species G F Powers New Haven Conn—p 201
- Treatment of Poliomyelitis Past and Present J Ruhrah, Baltimore—p 217
- *Influence of Fruit and Vegetable Feeding on Iron Metabolism of the Infant F W Schultz Minerva Morse and Helen Oldham Chicago—p 225
- Cholesterol Partitions of the Blood in Myxedema (Cretinism) H Schwarz and Anne Topper New York—p 242
- Interpretation of Basal Metabolism of Children F B Talbot Boston—p 247
- Motion of Growth XV Prolegomena to Clinical Study of Human Growth and Metabolism N C Wetzel Cleveland—p 252

Effect of Aging on Antiscorbutic Material—Gerstenberger and his associates found that fresh orange juice, spray dried as a constituent of a lactose orange juice mixture, retains its antiscorbutic potency in a practically undiminished degree for at least fifteen months after its manufacture. This conclusion was reached on the basis of observations made on groups of scorbutic guinea-pigs and in one severe case of infantile scurvy. The scorbutic guinea-pigs were cured by the daily administration of an amount of the spray dried orange juice equivalent to 3 cc of fresh orange juice, and the human infant by the giving of a daily dose equal to 45 cc of fresh orange juice. Fresh lemon juice spray dried as a constituent of an acid protein milk to which is added at the time of manufacture 20 cc of lemon juice per liter, possessed, from five to twenty-three months after its manufacture, antiscorbutic potency adequate to cure scurvy in six scorbutic infants, as judged clinically and roentgenologically. The weight curves in the two infants who were decidedly underweight responded with an immediate, decided and continuous upturn, whereas the weight curves of the four infants who were not so much underweight did not so respond even though the clinical and roentgenologic symptoms of scurvy had disappeared. In two of these four infants, additional administration of the antiscorbutic vitamin in the form of fresh orange juice did not alter the weight curve at the time. Infections that were present in these infants on a non-scorbutic basis were accepted as the principal cause for the irregular weight curves. These six infants received daily at different periods the equivalent of from 9 to 24 cc of lemon juice in the form of acid protein milk. No case of scurvy in infants fed the acid protein milk has so far come to the authors' attention. This observation indicates that this milk is adequately antiscorbutic.

Retardation in Ossification of Carpal Centers—Hess and Abramson report an instance of prolonged retardation in the development of the carpal centers in two brothers. In the

older brother, as late as 8 years of age but two centers had appeared at the wrist and no progress had been made in this respect for two years. Suddenly during the ninth year, from winter to autumn, a spurt in ossification came about. Films taken in November of this year revealed the presence of five centers in the left and six in the right wrist, in addition to new centers at the distal ends of the ulnas, the appearance of which had been delayed by approximately two years. No adequate explanation can be suggested for this sudden increase in ossification. The boy's height had remained the same, but his weight had increased 6 pounds and there was an undoubted improvement in his general condition. The younger patient was never so marked a case of carpal retardation, having three carpal centers instead of five or six at 5 years of age. He caught up to the normal gradually, so that at 7 years he approached closely to the standard, except for a delay of the distal epiphyses of the ulnas. Whereas the older patient was somewhat below the average for height-weight-age, the younger was somewhat above, tending to be stout. His metabolic rate, however, was slightly above rather than below the average. It may be added that the development of the carpal centers of both parents appeared normal.

Fruit and Vegetable Feeding—Schultz and his associates state that a study of the iron metabolism of three normal infants, ranging in age from 5 weeks to 7 months, has shown that vegetable (spinach) or fruit (apricots) feeding in addition to the milk formula exerts no significant effect on the amount of iron retained by the infant. Such feeding increased the iron intake from 60 to 171 per cent. The hemoglobin concentration and the number of erythrocytes in the blood were within or above the normal range for infants of this age and were not raised by the vegetable or fruit feeding. A study of the effect of such feeding on an anemic infant, 23 months old, who had been living on an almost exclusive milk diet has shown a lack of effect in the case of dried spinach but a marked increase in retention of iron when apricots were added to the diet, an effect that disappeared again after wheat germ extract was included. The effect in each case is related to the amount of fecal matter eliminated in the period of metabolism. The hemoglobin concentration and erythrocyte count of the blood were not improved during the course of such feeding. A large increase in the concentration of soluble iron in the diet of the anemic infant, brought about by adding ferric ammonium citrate, resulted in a large increased retention of iron but, up to the end of three weeks on the diet, only a slight increase in the number of erythrocytes had occurred, and practically no change in hemoglobin concentration. When the diet of the anemic infant was further supplemented by liver, the retention of iron was increased still more. The retention in this instance was accompanied by a rise in hemoglobin from 6 to 91.

Journal of Thoracic Surgery, St Louis

2 533 642 (Aug) 1933

- Presidential Address Review G P Muller Philadelphia—p 533
- Results of Phrenic Nerve Operations in Two Hundred and Twenty Two Cases with Discussion of Technique of Operations H R Decker, Pittsburgh—p 538
- *Estimate of Value of Phrenic Nerve Interruption for Phthisis Based on Six Hundred and Fifty Four Cases L W Nehil and J Alexander Ann Arbor Mich—p 549
- Effect of Phrenicectomy on Cough and Expectoration Study Based on Elimination of Lipiodol and Foreign Bodies from Lungs H A Carlson H C Ballou H M Wilson and E A Graham St. Louis—p 573
- *Behavior of Bronchopulmonary Smooth Muscle as Demonstrated by Electrophysiographic Records I Preliminary Report E F Butler Elmira, N Y—p 589
- Pneumonectomy for Sarcoma of the Lung in Tuberculous Patient H Lilienthal New York—p 600
- Changes in Heart and Pericardium Brought About by Compression of Legs and Abdomen C S Beck Cleveland and E F Bright Boston—p 616
- Removal of Needle from Heart with Electrocardiograph Records Before During and After Operation F A C Scrimger Montreal Canada—p 629

Phrenic Nerve Interruption for Tuberculosis—Of the 654 patients who have had a phrenic operation for tuberculosis from three months to six years ago, the present status of 612, or 93.5 per cent, is known to Nehil and Alexander. Phrenic operation was used alone in 302 cases and, in addition, in three cases of the childhood type of tuberculosis and in three cases

on both sides, but on the second side only after diaphragmatic motion returned following a temporary interruption of the nerve on the first side. Of these, 272 have been traced, 34 per cent are apparently cured or arrested, 35 per cent are apparently arrested, quiescent or improved, 12 per cent are stationary and 5 per cent are worse, 14 per cent of the patients are dead. There were 215 cases with pulmonary cavity in which phrenic paralysis alone was given an adequate opportunity to close the cavity. It succeeded in 38 per cent. In sixty-five of the 181 traced cases in which a phrenic paralysis was used following an unsatisfactory pneumothorax there was no cavity, 42 per cent are arrested and 50 per cent are improved, and 7 per cent of the patients are dead. The cavities of 59 per cent of the 116 patients who had had cavities are closed. Of the forty-seven cavities that remained open, 51 per cent are still open or the patients are dead and 49 per cent have been closed by thoracoplasty, extrapleural pneumonolysis, multiple intercostal neurectomy or scalenectomy. An initial phrenic paralysis failed to cause satisfactory improvement of sixty-six patients, for whom pneumothorax, thoracoplasty or other supplementary operation was subsequently added. In sixty-seven cases, phrenic operation was used concomitantly with thoracoplasty, extrapleural pneumonolysis, intercostal neurectomy or scalenectomy. The clinical results obviously owe more to the major operations (except perhaps scalenectomy) than to the phrenic operation. In the entire series, phrenic paralysis fulfilled the authors' expectation of it, which ranged from mere palliative symptomatic relief to complete arrest of the tuberculosis in 58 per cent partly fulfilled it in 6 per cent, failed to fulfil it in 30 per cent, and in 5 per cent the result is unknown. Phrenic paralysis was neither directly nor indirectly responsible for the death of any patient. The only severe, permanent complication of the operation was a dyspnea that has persisted for eighteen months. In one case the operation was immediately followed by extension of a few active lesions in the contralateral lung which was checked by induced pneumothorax. The results have been in limited lesions that were relatively fresh and that contained fibrous tissue that was young enough to be still capable of considerable contraction. The least satisfactory results have been in extensive fibrotic lesions with large stiff-walled cavities. The authors are convinced that phrenic paralysis is of genuine value.

Behavior of Bronchopulmonary Smooth Muscle—The investigations of Butler corroborate those of Luisida that spontaneous pulmonary contraction can be accepted only when it occurs in lungs isolated from the rest of the body and in the absence of any vagal stimulation. It is more apt to occur in lungs that have been previously inflated to a moderate degree. The author investigated also the response to vagal stimulation, the response to intrapulmonary pressure and the response to external compression. From these observations he concludes that pulmonary systole and diastole has been proved to be a factor in the normal mechanism of respiration the systole occurring during expiration and aiding in the expulsion of air from the lungs. Stimulation of the vagus causes contraction of bronchopulmonary smooth muscle. The normal stimulus to contraction of bronchopulmonary smooth muscle is distention of the lung by inspiration. An additional stimulus not encountered under normal conditions is external compression of lung tissue. Spontaneous contractions may occur in isolated lungs without any external stimulation.

Kansas Medical Society Journal, Topeka

71 291-352 (Aug.) 1935

Certain Practical Aspects of Nutrition in Childhood P C Jeans Iowa City—p 291

In Memoriam J T Axtell Newton—p 294

Tularemia Summary of One Hundred and Twenty Cases Reported in Kansas E C Brown I L Lattimore and I C Hofmann Topeka—p 296

Method of Closed Prostatectomy L S Nelson Salina—p 302

Method of Closed Prostatectomy—Nelson describes a method for closed prostatectomy in which a transverse incision is made about 1½ inches above the pubis giving an exposure wide enough for visibility. A catheter is left in the urethra and the prostate is grasped securely with a tenaculum the capsule is opened posterior to the urethral orifice and the gland is enucleated. Care is used in preserving as much of the capsule as possible. After the gland is enucleated a hot sponge

is placed in the prostatic bed for a few minutes and held there under slight pressure. Then, with a boomerang needle two sutures are placed deep in the prostatic capsule, one at 8 o'clock and one at 4 o'clock with the pubis considered 12 o'clock on the dial, then one or two deep transverse sutures are placed beneath the catheter, passing below the capsule, which may be picked up and elevated somewhat for the placing of these sutures, which pass through the anterior capsule and, after placement, both are tied moderately over the catheter and capsule. Suction may be used to improve visibility. Great care must be used, especially with the lateral sutures, to avoid the rectum. These sutures when properly placed will control hemorrhage. If capsule is abundant a flap is picked up at 6 on the clock dial and drawn toward the urethra, where it is fastened deep in the prostatic bed. This furnishes a fairly good new posterior urethra. After this is accomplished a silkworm-gut suture is placed through the urethral catheter and not tied, both ends being clamped outside the abdominal wall. The bladder wall is then tightly closed around these two strands of suture with a number 1 ten-day chromic gut in interrupted sutures. A number 2 chromic suture is used for the fascia, plain catgut for the subcutaneous tissue and a nonabsorbable suture for the skin. All these are interrupted sutures. The after-care of the patient is somewhat variable but usually little irrigation is needed. If clots form, irrigation is used moderately and carefully so as not to distend the bladder, which might produce a leak. The author has had no complication, no hemorrhage and no leakage from the bladder.

Laryngoscope, St Louis

43 693-776 (Sept.) 1933

The Larynx I. Practical Anatomic Considerations of the Larynx J M Lore New York—p 693

Id II Etiology and Treatment of Contact Ulcer of the Larynx C L Jackson Philadelphia—p 718

Id III Differential Diagnosis of Diseases of the Larynx J D Kernan New York—p 722

Diathermy Surgical and Medical in Otolaryngology L M Hurd New York—p 730

Unilateral Paralysis of Face Palate and Larynx Case for Diagnosis M Feldman Brooklyn—p 740

Septic Sore Throat C G Page Boston—p 742

Teaching Tonsillectomy J D Seiberling Philadelphia—p 748

*Lateral Sinus Thrombophlebitis with Extension to the Torcular Report of Two Cases Operation with Recovery S D Greenfield Brooklyn—p 751

Headache Drumhead Retraction and Vacuum Formation E R Lewis, Los Angeles—p 762

Cerebrospinal Rhinorrhea A I Weil and D R Womack New Orleans—p 767

Lateral Sinus Thrombophlebitis—Greenfield reports two cases. One presented symptoms of an acute surgical mastoid. At operation the author found a large perisinuous abscess the sinus was bathed in a pool of pus and its wall was thickened and covered with an abundance of mushy granulations. At one point these granulations were necrotic and black. The sinus plate was removed until normal sinus wall was visible in the circumference of the diseased area. Following the mastoidectomy the patient had a normal postoperative course and, after being afebrile four days, was discharged from the hospital. Two weeks later he had a chill followed by a quick rise in temperature to 105 F. A blood culture taken immediately on admission was reported positive for *Streptococcus haemolyticus*. The jugular vein was tied and the lateral sinus was opened and drained and a large well organized thrombus was removed from it. At the end of four days the temperature was normal and remained so until the eighth day. Blood cultures taken during this period were reported negative. On the ninth day the patient again had a chill and his temperature rose to 105 F. The blood cultures were again positive for *Streptococcus haemolyticus*. The mastoid wound was opened and the disease was found to have extended backward involving the torcular end. The lateral sinus was uncovered backward until healthy sinus wall was encountered. The exposed lateral sinus was incised and drained and a number of well organized thrombi were removed. After this operation the patient went on to an uneventful recovery. In the other case a diagnosis of thrombophlebitis of the sinus and bacteremia was made before the primary mastoid operation. There was a history of chills, a septic temperature, a recent acute otitis and finally a positive

blood culture soon after admission to the hospital. At the time of operation the otoscope revealed a resolving middle ear. When the jugular vein was ligated, a badly broken down mastoid was found. There was a fistula in the lateral sinus, from which free pus exuded. The sinus was uncovered and all thrombi were removed. Free bleeding was obtained from the torcular end only. After a week of irregular temperature the blood cultures became negative and it appeared as if the patient was going on to an uneventful recovery. However, on the tenth day the patient had a chill, followed by a rise in temperature to 106 F. The blood culture was positive. The wound was reopened and it was found that extension had taken place in the torcular end. The cortex over the lateral sinus was removed until healthy sinus wall was encountered. Some organized thrombi were removed and the diseased portion of the sinus was slit widely open. Free bleeding was obtained from the torcular end only. The patient then went on to recovery after a ten-day stormy course.

New England Journal of Medicine, Boston

209 319 366 (Aug 17) 1933

- Causes of Deaths from Heat in Massachusetts G C Shattuck and Margaret M. Hilferty Boston—p 319
Diagnosis and Treatment of Pernicious Anemia W P Murphy Boston—p 329
Diagnosis and Treatment of Secondary Anemia W P Murphy Boston—p 331
Pelvic Infection in Women I E Phaneuf Boston—p 334
Primary Carcinoma of Bronchus Report of Two Cases Diagnosis by Bronchoscopy and Biopsy C A Rice Holden Mass—p 341
What We Have Learned from Five Hundred Spinal Anesthetics F H Washburn Holden Mass—p 345
President's Address H O Chesley Dover N H—p 349
Urinary Retention Outline of Causes and Treatment P J Doyle Dover N H—p 351

209 367 418 (Aug 24) 1933

- Cysts of the Prostate R C Graves and C J E Kichham Boston—p 367
Metaplasia in the Penis Presence of Bone Bone Marrow and Cartilage in the Glans V Vermooten New Haven Conn—p 368
Some Hermaphrodites I Have Met H H Young Baltimore—p 370
Anal Fistula E P Hayden Boston—p 376
Cholesterol to Cholesterol Ester Ratio in the Plasma of Diabetics with Advanced Arteriosclerosis C B F Gibbs Elizabeth Buckner and W R Bloor Rochester N Y—p 384
Multiple Causes of Seizures in the Individual Epileptic Patient W G Lennox Boston—p 386
Treatment of Amnesia Case Report B Cohen North Grafton Mass—p 389
The Progress of Nutrition T L Burnett Boston—p 392

New Jersey Medical Society Journal, Orange

30 517 598 (Aug) 1933

- Economic Relations of Medicine W H Ross Brentwood Long Island N Y—p 517
Are We Approaching a New Era in Medicine? J B Morrison Newark—p 525
Discussion of Our Economic Problem J A Hartwell New York—p 532
Id E S Sherman Newark—p 540
*Value of Calcium as a Preoperative Agent in the Postoperative Course of Surgical Patients C H Evans East Orange—p 542
Salicylates in Rheumatic Fever H Brooks New York—p 550
Putting on Weight with Insulin G Ginsberg Hoboken—p 555
Importance of the Study of Human Constitution in Practice of Medicine T Hnat Elizabeth—p 557
Hypertension L Mancusi Ungaro Newark—p 559
Mesenteric Vascular Occlusion A B Abrams Newark—p 564
The Otorhinolaryngologist His Work and His Place in Medicine I W Voorhees New York—p 567
Medical Economic Problems R L McKiernan New Brunswick—p 569
Recent Advance in Clinical Study of Endocrine Disturbances in Women Rita S Finkler Newark—p 570
Medical Economics F A Fought Philadelphia—p 573
Relation of Outpatient Department to Medical Economics L W Deichler Philadelphia—p 577

Value of Calcium in Preoperative Preparation—Evans presents a preliminary report on the routine use of calcium in preoperative preparation. Each adult patient is instructed to eat a sufficient amount of plain food (meat once a day, not fried), to drink at least one glass of milk with each meal, six glasses of orange juice daily, 2 and 3 ounces of stick candy daily, to take deep breathing exercises at least three times each day, to see that the bowels move every twenty-four hours and to sleep at least nine hours each night. On the morning of the third day before operation, each adult patient receives a

sufficient amount of calcium so that there will be a slight hypercalcemia at the time of operation. 3 Gm of calcium gluconate by mouth immediately after each meal. On the night before operation, 10 cc of a sterile 10 per cent solution of calcium gluconate is given intramuscularly and a sufficient amount of alkali so that the urine will be slightly alkaline on the morning of operation. A plain soap-suds enema is given on the evening before operation, and at bedtime 0.1 Gm of phenobarbital is given by mouth. Three quarters of an hour before the operation each patient receives from 0.008 to 0.016 Gm of morphine sulphate intramuscularly. After the operation, a retention enema of from 500 to 800 cc of tap water is given. As soon as the patient begins to react from the anesthesia 10 cc of a 10 per cent sterile solution of calcium gluconate is given intramuscularly and the patient is placed in a slight Fowler position. No abdominal binders or tight abdominal dressings are used. Fluids, if desired are given immediately after operation. The patient is turned on the side every three or four hours and during the first four or six days is made to take a series of deep breaths three or four times a day. During the first three or five days especially in upper abdominal operations, a sufficient amount of morphine sulphate is given intramuscularly to prevent any sharp pain, restlessness or fear. A small rectal tube is used if there is any distention. Enemas or cathartics are given on the third or fourth day after operation. Patients are catheterized if they do not void within twelve hours after the operation, and every eight hours until they void voluntarily. Dressings are not changed except to remove drains and sutures.

Philippine Islands Med Association Journal, Manila

13 375 410 (Aug) 1933

- Malignancy Among Filipinos II Incidence Based on Autopsy Materials Collected in Twenty Years (1907-1927) W de Leon Manila—p 375
Lectures on Malaria Prophylaxis and Mosquito Control P F Russell Manila—p 381

Radiology, St Paul

21 207 310 (Sept) 1933

- Pulmonary Emphysema Associated with Arrested Pulmonary Tuberculosis A Dunham Cincinnati—p 207
Recommendations of Third International Congress of Radiology Relating to Protection from X Rays and Radium L S Taylor Washington D C—p 212
Shall We Record and Report All X Ray Dosage in Roentgens? R R Newell San Francisco—p 216
Roentgenologic Examination of Digestive Tracts of Infants and Children L T LeWald New York—p 221
Diagnosis of Extragastric-Intestinal Abdominal Masses L G Rigler Minneapolis—p 229
Changes in Susceptibility of Drosophila Eggs to X Rays I A Correlation of Changes in Radiosensitivity with Stages in Development P S Henshaw and C T Henshaw New York—p 239
Atelectasis as Complication of Pulmonary Tuberculosis E A Gatterdam Phoenix Ariz—p 251
*Whole Animal Exposures to Highly Filtered Gamma Rays W G Whitman Baltimore—p 265
Some Applications of Physical Therapy in Medicine L J Gelber Newark N J—p 274
Congenital Nonrotation of the Colon Case Report M Golob New York—p 277
The Thoracic Surgeon and His Radiologic Co Worker W A Hudson Detroit—p 283
Depth Dose Calculations for Supervoltage X Rays M A Tuve Washington D C—p 289

Whole Animal Exposures to Gamma Rays—In order to determine some of the biologic effects of whole body exposure to penetrating X-rays, unaccompanied by softer radiation of practical interest in connection with the recent development of high voltage roentgen tubes, Whitman exposed a group of sixty-seven rats to the radiation from 6 Gm of radium highly filtered by 16 mm of lead 1 mm of platinum, 1 mm of brass and 5 mm of celluloid. Another group of sixteen rats was exposed to 25 Gm of radium filtered by 1 mm of platinum and 1 mm of brass, giving a similar exposure to the hard gamma rays, with the addition of such soft components as penetrate 1 mm of platinum and 1 mm of brass. The lethal exposure was found to be four hours for 6 Gm of radium, with filters, for a distance of 62 mm to the midposition of the rat. The minimum exposure which could be detected by blood counts was found to be from one twentieth to one thirtieth of a lethal dose. For rats that have reached maturity before exposure the sterilizing dose does not appear to be less than the lethal dose.

Breeding experiments were carried out with the result that the first progeny of rats exposed to more than one tenth of a lethal dose showed a small increase in the number of abnormal offspring. Dental films enclosed in a 7 mm lead cassette were calibrated in terms of the lethal rat dose to serve as a more sensitive measure of the amount of exposure of laboratory workers to such hard radiations.

Science, New York

78 177 196 (Sept 1) 1933

Bacteria as Food for Vertebrates. V Burke Pullman Wash—p 194
*Localization of *Spirochaeta Pallida* in the Brains of Rabbits Following Intraspinal Injection of Testicular Tissue and Physiologic Salt Solution G W Raiziss and Marie Severac Philadelphia—p 195

Localization of *Spirochaeta Pallida*—Raiziss and Severac attempted to render the central nervous system of the rabbit more easily penetrable to spirochetes by injection of normal testicular extract. Six rabbits received an intraspinal injection of an emulsion of testicular tissue of normal rabbits. Three were inoculated intratesticularly and three intravenously, by the usual method, with syphilitic testicular tissue (Nichols strain). From six to seven weeks later testicular lesions appeared and when the brains of the animals were removed and emulsions prepared from them were injected into testicles of normal rabbits, positive results (lesions containing numerous active spirochetes) were obtained in all the six animals. This was complicated by the somewhat unexpected fact that a positive result was also obtained with one animal injected intraspinally with physiologic solution of sodium chloride. This renders the interpretation of the results obtained somewhat uncertain. In order to determine whether the effect may not possibly be due to the traumatic shock of the injection, experiments are now in progress in which distilled water and also a number of other substances are being injected intraspinally. The net result is that spirochetes may be induced to penetrate into the central nervous system of rabbits with the aid of an intraspinal injection of normal testicular tissue or (in one case) physiologic solution of sodium chloride.

South Carolina Medical Assn Journal, Greenville

29 203 218 (Sept 1) 1933

Treatment of Skull and Brain Injuries A J Burst Charleston—p 206
Rocky Mountain Spotted Fever in South Carolina O B Myer Columbia—p 209

Texas State Journal of Medicine, Fort Worth

29 233 294 (Aug 1) 1933

Complementary Action of Certain Anesthetic Drugs E H Schwab C Herrmann and C T Stone Galveston—p 240
Primary Carcinoma of the Lungs Report of Ten Cases I T Pilcher and P Brindley Galveston—p 247
Use of Insulin in Malnutrition in Adults E V DePew San Antonio—p 254
Blood Sugar in Allergic Persons J H Black Dallas—p 257
Rectal Complications of Pregnancy O S McMullen Victoria—p 260
Recent Advances in Our Knowledge of Primary Anemia W H Potts Jr Dallas—p 261
Use of a Nasal Packing R T Canon Lubbock—p 266
Neuromas of Reticulo-endothelial Origin G T Caldwell Dallas—p 268
X-Ray Radiation in Treatment of Uterine Hemorrhage D L Hess San Angelo—p 275
*Specificity of the Weil-Felix Reaction H A Kemp H E Wright and Faith Wayne Dallas—p 278

Weil-Felix Reaction—During the past year and a half Kemp and his associates have been doing Weil-Felix tests on serum from cases of typhoid, paratyphoid and undulant fever. Their work has shown that the Weil-Felix reaction may be positive in conditions other than typhus. They recognize the importance of dissociation in the handling of their stock antigens. They are willing to accept the use of an O type antigen because of an added degree of specificity. They do not at this time possess a clear understanding of the mechanism of the Weil-Felix test. Nevertheless they appreciate its great practical value for two reasons: guinea pig inoculation in the diagnosis of typhus is so fraught with difficulties that it is impossible in the large number of cases in which facilities for this maneuver are lacking and in typhus fever the Weil-Felix reaction becomes positive at relatively high titers (1:240-1:320) early in the disease. These titers will increase as

time passes. Increasing titers of agglutination make a non-specific test a specific test—one of diagnostic importance. Agglutinating titers in the Widal reaction or in the quantitative Huddleson, or in tests against known strains of dysentery organisms increase during the course of these illnesses. The same increase will take place in the agglutinating titers of the Weil-Felix test both in typhus and in Rocky Mountain spotted fever (Parker and Davis). Therein lies the specificity of the Weil-Felix reaction: early positive reaction with increasing agglutinating titer.

Western J Surg, Obst & Gynecology, Portland, Ore -

41 485 546 (Sept 1) 1933

*Advantages and Technique of Preliminary Hemostasis in Thyroidectomy M Nordland and L M Larson Minneapolis—p 485
Dangers of Air Embolism in Thyroidectomy D Guthrie and R L Evans Sayre Pa—p 497
Further Observations on Parathyroid Protection W I Terry and H H Searls San Francisco—p 507
Diseases of the Thyroid in Children R B Cattell Boston—p 516
*Hyperthyroidism Associated with Pregnancy J A Lehman Philadelphia—p 524
Preoperative and Postoperative Treatment of Bad Risk Plus Four Toxic Goiter S J Waterworth Clearfield Pa—p 531

Hemostasis in Thyroidectomy—To prevent injuries to the laryngeal nerves or parathyroids, hemorrhage and infection, Nordland and Larson recommend and describe extrafascial ligation of the inferior thyroid arteries preliminary to thyroidectomy. By a careful anatomic dissection, structures may be accurately defined and the advantages of hemostasis gained. The usual type of incision for goiter is made and the flaps containing the platysma and superficial fascias are reflected upward and downward. The medial border of the sternocleidomastoid muscle is dissected free in its lower midportion and the margins are retracted outward. Directly underneath the fascia of the prethoroid muscles is exposed and at the margin of the sternomastoid a vertical slit about 3 cm in length is made in the superficial layer of the deep cervical fascia. The outer cut edge of this fascia is retracted laterally and the index finger is carried posteriorly until it is possible to palpate the transverse processes of the cervical vertebrae. The inferior thyroid artery is found running medially at right angles from the carotid artery at the level of the sixth cervical vertebra. A linen suture on a carrier is readily placed about the artery and the vessel ligated by thrusting the carrier around the superior pole, starting from the trachea and proceeding to the lateral margins of the gland. Blunt ligature carriers are far superior to the application of artery forceps. It is advantageous to guide the carrier with the finger in order to include only the amount of tissue desired. Ligation may be made in this manner either doubly or singly without danger to the superior laryngeal nerve. The authors have carried out preliminary ligation of all four arteries to the thyroid in 168 cases and state that with proper preliminary hemostasis the operative field is drier, the incidence of injury to the recurrent laryngeal nerves is definitely decreased, fewer ligatures on bleeding vessels are necessary, postoperative wound drainage is less in amount, and a better cosmetic as well as functional result is uniformly obtained. The particular indication for preliminary ligation of the inferior thyroid arteries exists in the case of recurrent toxic goiters in which secondary operations are especially prone to be complicated by nerve injury, hemorrhage and infection. Improvements in results as well as facilitation of technique have been found to accompany the procedure in this type of case. Nutrition to the parathyroid bodies is not impaired following this type of ligation.

Hyperthyroidism and Pregnancy—Lehman states that in order to protect the patient during the subsequent months of gestation and during labor it is necessary to control the hyperthyroidism. A properly conducted thyroidectomy is much more satisfactory and is attended with less risk than an interruption of pregnancy. Of the authors thirty-three cases five could not be traced; twenty-three patients went to full term and were delivered of healthy offspring, two required cesarean section but bore healthy babies, one was delivered at eight months of a hydrocephalic monster in one the pregnancy was interrupted because she was too weak for the ordeal of labor, and one patient died of cardiac failure one month after lobectomy, from an acute exacerbation of a long-standing hyperthyroidism.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 321 364 (Aug 19) 1933

- Occupational Dermatitis W G Harvey—p 321
Occupational Diseases of the Skin J C Bridge—p 324
Role of Fusion Operations as Applied to the Hip Joint M S Henderson—p 327
*Para Esophageal Diaphragmatic Hernia N C Lake—p 331
*Electrosurgical Treatment of Minor Anal Conditions W A Mein—p 332

Para-Esophageal Diaphragmatic Hernia—Lake describes an operation for para-esophageal diaphragmatic hernia and reports a case in which the operation was performed. After four years there has been no recurrence of symptoms. With the patient under tracheal ether anesthesia, an epigastric, paramedian laparotomy was performed, the constriction of the stomach, where it passed through the diaphragm, was examined and no evidence of permanent damage to the wall was found. There were no intrasaccular adhesions and the stomach was easily reduced into the abdomen after the admission of air to the sac. The peritoneal sac was passed through the diaphragm immediately to the left of the esophagus and aorta (corresponding to a para-esophageal defect), which was about $2\frac{1}{2}$ inches wide by 5 inches long. The sac could not be inverted into the abdomen, and efficient repair of the aperture from the abdominal aspect appeared unlikely. Therefore the abdominal wound was packed and the patient turned on his right side for thoracotomy. The eighth rib was resected for practically its whole extent through a long incision extending back to the spinous processes. The pleura was opened and the lung was allowed to collapse by reduction of the intratracheal pressure. After protective measures were applied, the lung was retracted upward and the heart somewhat forward. A thin fibrous layer that covered the peritoneal sac was incised and, the greater part of the sac having been removed, the aperture was closed by a ring catgut suture. The muscular defect was closed by the use of tendinomuscular strips cut from the semispinalis muscles at the vertebral end of the incision. Six of these sutures were "darned" over the aperture without strain, the Gallie technic for fascial sutures being used. The esophagus was slightly short, but the level of closure was carried upward as the esophagus was approached. The reflected pleura was sutured over the fascial "raft" and the superficial wound was closed in the usual manner, the pleural cavity being completely emptied of air by raising the intratracheal pressure and so expanding the lung before the last pleural suture was tied. The patient was turned again on his back and the stomach was anchored to the anterior abdominal wall, after the fashion of a Rovsing gastropexy, before the abdomen was closed. Convalescence was uneventful. The patient left the hospital forty days after admission, taking all food without discomfort.

Electrosurgical Treatment of Anal Conditions—For anal fissures Mein uses the monopolar or Oudin current. After anesthesia, a rectal speculum is introduced and the fissure located and "sprayed" with this current. The dehydrated eschar is left in place. From three to four days after the operation, the anus is gently swabbed out with a mild antiseptic. The patient is allowed up on the day after the operation. In anal polyps, perianal anesthesia is administered and the polyp is brought down. If the base is higher than the line of perianal anesthesia, it is injected with a local anesthetic. A pair of curved artery forceps are applied to the base of the pedicle. The polyp distal to the forceps is severed with the cutting current. The electrode is then applied to the point of the forceps and the coagulating current turned on until a zone appears proximal to the forceps. If the base is broad a catgut ligature should be applied. If the polyp is above the line of peritoneal reflection, the ultimate slough will extend beyond the coagulated area visible at the time of operation. If too heavy or too prolonged a current is used, a perforation into the peritoneal cavity may result. The patient can be discharged in a week or ten days. In anal fistulas, local anesthesia is administered as usual. A soft phosphor bronze wire about 3 inches in length is used as the positive electrode. The wire is introduced down the sinus in its entire length until a finger in the

rectum feels the end of the wire just under the rectal mucous membrane. The wire is withdrawn about one-fourth inch and a medium coagulation current is passed until the skin shows signs of coagulation. With the current still on, the wire is withdrawn and a dry dressing is applied. The patient is allowed up on the following day. In hemorrhoids, after anesthesia, some gauze is rolled into a pear-shaped mass and inserted up the anus beyond the hemorrhoid bearing area. Traction is made on it. A needle, bent to form a small arc of a large circle, is used as the electrode. Each hemorrhoid is punctured at the distal end, and the electrode is inserted for a distance of about one-half inch. The coagulation current is turned on until an area of coagulation appears at the entrance. About the same time the hemorrhoid proceeds to "boil." The electrode is removed with the current still on. In cases of thrombosed hemorrhoids, the ordinary straight needle is used. The hemorrhoid is opened with a cutting current and the clot is evacuated by sponging. A ball electrode is then used, and the interior of the hemorrhoid is thoroughly sprayed with the coagulating current. Any anal tags are excised with the cutting current. The wound is dressed with a pyramidal dressing. The patients are permitted to get up on the fifth day and discharged on the seventh day. Postoperatively, the bowels are not allowed to act up to seven days. This may vary, the criterion being the tolerance of the patient. On the sixth night cascara is given and, half an hour before the bowels act on the following day, from 4 to 6 ounces of warm olive oil is slowly injected into the rectum and retained.

Journal of Hygiene, London

33 295 434 (Aug.) 1933

- Effects of Colloidal Silica on Experimental Tuberculosis in Guinea Pigs S L Cummins and Cicely Weatherall—p 295
Silicotic Lungs: Minerals They Contain W R Jones—p 307
Influence of Radiant Heat and Air Movement on Cooling of Katathermometer T Bedford and C G Warner—p 330
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Control of Scarlet Fever by Active Immunization J S Faulds—p 353
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Genetic Predisposition to Bacillus Pliiformis Infection Among Mice J W Gowen and R G Schott—p 370
Agglutinins for Typhoid Paratyphoid Group in a Random Sample of the Population of British Guiana G Gigholi—p 379
*Agglutinins Found in the Serum of Subjects Inoculated with Typhoid Paratyphoid Vaccine G Gigholi—p 387
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Microbic Dissociation: Detection of the R Variant by Means of a Specific Drop Agglutination E J Pampana—p 402
*Selective Mediums for Isolation Cultivation and Differentiation of Bacillus Coli and Bacillus Lactis Aerogenes W J Wilson—p 404
Inactivation of Bactericidal and Hemolytic Complement on Standing J Gordon and L Hoyle—p 411
Different Types of Corynebacterium Diphtheriae J Menton T V Cooper F W Duke and W H Fussell—p 414
Statistics of Erysipelas in England and Wales W T Russell—p 421

Typhoid-Paratyphoid Agglutinins—The results of Gigholi confirm those of Gardner that typhoid-paratyphoid inoculation gives rise to production of somatic agglutinins. This reaction is marked in the first few weeks following vaccination but it is always limited to low and medium dilutions, the highest titer at which a positive result was recorded in the author's series of cases with an O antigen was 1:320. In actual typhoid infection, H agglutinins usually occur in much higher titers than the corresponding O agglutinins, but even so the O titers found in typhoid patients are generally much higher than the O titers found in vaccinated subjects, especially after more than two months has elapsed from the date of vaccination. Smith, in his recent work on cases of typhoid and paratyphoid B, has shown that a single test may not be sufficient for the demonstration of somatic agglutinins. Repeated tests invariably revealed their existence, usually in considerable titers (from 1:100 to 1:400). In the author's experience with typhoid (four cases) and paratyphoid C (twelve cases), O agglutinins have been found constantly after the first week of the disease in dilutions from 1:80 to 1:2,560, usually appearing at a somewhat earlier date in the course of the disease than the corresponding H agglutinins. The presence of O agglutinins in the serums of vaccinated subjects does not destroy the utility of qualitative receptor analysis as a means for the serologic diagnosis of typhoid in vaccinated

subjects, but it is necessary to make this a quantitative as well as a qualitative test by establishing the end titer of agglutination for each antigen. The test should be repeated after an interval of a week or more in negative or doubtful cases. In the diagnosis of typhoid in vaccinated subjects, one should not expect much from serologic methods during the first three months following inoculation, but after this period has elapsed the finding of O agglutinins in a high dilution suggests active infection, negative observations, on the other hand, have little value unless confirmed by repeated tests, carried out at intervals of five or six days.

Media for Differentiation of *Bacillus Coli* and *Bacillus Lactis-Aerogenes*—Wilson describes an agar medium that enables one to make a direct estimation of the numbers of coliform bacilli in a water or milk sample. An enrichment medium for *Bacillus lactis-aerogenes* is one containing in every 100 cc of peptone water 0.5 Gm of sodium citrate, 0.25 Gm of soluble starch and 1 cc of a 1 per cent watery solution of neutral red. Enrichment mediums for *B. coli* are (1) lactose peptone water containing in every 100 cc 1 Gm of anhydrous sodium sulphate and 2 cc. of a 1 per cent solution of rosolic acid in absolute alcohol, and (2) lactose peptone water containing in every 100 cc. 2 cc of a 40 per cent solution of methanamine in water. A medium consisting of 100 cc of water, 10 Gm of peptone, 1.25 Gm of soluble starch sterilized at 115 C for fifteen minutes and 5 cc of Andrade's indicator was found useful in the differentiation of *B. coli* and *B. lactis-aerogenes*. Of twenty-three strains of *B. coli* tested, twenty-one gave entirely negative results, while two, after an incubation period of a few days, produced an acid reaction. Of these two, one was isolated from the urine in a case of cystitis and one from feces, and both appeared to be pure cultures. Of forty-four strains of *B. lactis aerogenes* tested, thirty-eight produced acid and gas and six were negative. The addition of starch to the citrate neutral red peptone water medium proved of advantage in practice. In a medium containing 1000 cc of water 10 Gm. of peptone 1.25 Gm. of soluble starch, 5 Gm of sodium citrate and 10 cc. of a 1 per cent solution of neutral red, twenty-nine strains of *B. coli* failed to grow, whereas forty-eight strains of *B. lactis-aerogenes* gave good growth, resulting often in the bleaching of the medium.

Journal of Mental Science, London

79 433 562 (July) 1933

- The Fourteenth Maudsley Lecture. British Influences in Psychiatry and Mental Hygiene. A. Meyer—p. 435
The Thyroid Gland in Mental Deficiency. Histologic Study. J. L. Newman—p. 464
The Blood Urea in Psychotics. D. N. Parfitt—p. 501

Journal of Tropical Medicine and Hygiene, London

36 217 232 (Aug 1) 1933

- Symptomatology of Yaws in Liberia. Details of Statistical Method Used in This Study. G. W. Harley—p. 217
Some Observations on Bacteriologic Examination of Stools. A. M. Collier—p. 224

Lancet, London

2 393-448 (Aug 19) 1933

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Wuchereria Bancrofti Infection. Two Case Reports. T. W. O'Connor and C. R. Hulse—p. 404
Further Observations on Biochemistry of Asthmatic Conditions with Special Reference to Urinary Protease. G. H. Oriel—p. 406
Electrocardiographic Changes in Toxic Polyneuritis. S. B. Campbell and R. S. Allison—p. 410
Meningitis Due to Hemophilic Organisms. H. S. Carter and Catherine M. Macleod—p. 412

***Wuchereria Bancrofti* Infections**—O'Connor and Hulse excised the lymph nodes in two cases diagnosed as filarial, with a view to recovering adult filarial worms. Both operations were performed before midday and it was predicted as the result of previous observations that, if living *Wuchereria bancrofti* females were present, parturition would not have taken place but would be imminent or just beginning. The prediction proved to be correct in both cases. In the first case the glands were excised at 11.30 a.m. and microfilariae were found in the vagina and in small numbers in the lymph canals close to the vulva. In the second case while microfilariae

were also found in the vagina, no embryos had reached the exterior of the parent worm before operation. In both cases, apparently healthy microfilariae and microfilariae and eggs in various stages of degeneration were found in the afferent radicles and cortical sinuses of lymph nodes. In a separate group of glands in the second case, healthy and degenerating microfilariae but no eggs were found in similar situations. This confirms O'Connor's previous observations that microfilariae reaching a lymph node along the lymphatic vessel containing the parent female may be destroyed in the gland. Apparently, destruction of microfilariae and eggs in the glands may take place by disintegration and absorption as well as by calcification. How eggs in addition to microfilariae may reach a lymph node is not clear, but it seems possible that, independent of abortion, a few eggs may pass to the exterior of the worm following the stream of microfilariae through the vagina at the end of parturition. If the parent worm is at some distance from the gland, it is conceivable that the nearly developed eggs will have completed development in the lymphatic canals and, having stretched the chorionic membrane, be transformed into completely developed microfilariae by the time they reach the gland. The numbers of microfilariae circulating in the blood at night in the second case were not immediately diminished after operation but were at first increased and later decreased. The authors suggest that the initial increase in numbers may have been due to the removal of the gland filters when the embryos had been destroyed, so that the parasites would reach the circulation in increasing numbers through the walls of the lymph nodes, a possibility that has already been demonstrated by O'Connor. Subsequently, owing to the obstruction of the lymphatic vessel by gland excision, stasis of lymph would probably occur followed by lymph thrombosis occasioning death of the parent worm or worms. A diminution in the number of microfilariae in the night blood would naturally ensue. The microfilariae still found in the blood at night probably come from other filariae beyond the scope of the two operations. In both cases, microfilariae and eggs were found in the cortical sinuses and substance of lymph nodes, where they were undergoing degeneration.

Meningitis Due to Hemophilic Organisms—Carter and Macleod present three fatal cases of meningitis due to so-called hemophilic organisms. The organisms differ in several respects morphologically, culturally and biologically from the classic coccobacillus of Pfeiffer, though some relationship probably exists. The identity of Pfeiffer's bacillus with certain influenza-like organisms occurring in so-called influenzal meningitis, leptothrix meningitis and septicemic cerebrospinal meningitis has been doubted by several writers, as Cohen, Henry, Braxton Hicks and Dible. The samples of cerebrospinal fluid from the three cases were all similar in character, moderately turbid with light purulent deposits. Microscopically, each contained large numbers of leukocytes, most of which were polymorphonuclear in type, and many pleomorphic gram negative bacilli.

Chinese Medical Journal, Shanghai

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- Treatment of Acute Appendicitis. J. A. Snell—p. 735
Treatment of Acute Gonorrheal Epididymitis. Z. M. Kau—p. 740
Study of Meningococci Isolated in China. F. F. Tang and S. Y. Yang—p. 747
Eclampsia as Seen in Canton, South China. H. E. Scheyer—p. 758
Zondek Aschheim Test for Early Pregnancy. S. O. Fum—p. 764
Chinese Leprosy Cases in the United States National Leprosarium. Clinical and Laboratory Study of Thirty-Six Patients with Seven Autopsy Reports. D. G. Lai—p. 772
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The Papworth Village Settlement for Tuberculous. Its Interest for China. H. S. Gear—p. 803
Phyllostomum in Shrimps. Mary N. Andrews—p. 813

Journal of Oriental Medicine, South Manchuria

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- Flocculation of Serum Proteins by Colloidal Tatty Acid. S. Imai—p. 1
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Paris Medical

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 *Semeiologic Study and Practical Value of Queckenstedt-Stookey's Test in Nervous Diseases H Roger and J Alliez—p 264
 *Pseudotumoral Syphilis of Spine Dissociated Action of Treatment on Meningeal or Spinal Lesions C Launay and G Poumeau Delille—p 271
 Influence of Stimulants on Visual Reaction Time to Auditory Signal R Jonnard and Mlle I Maire—p 273
 Catatonia Pathologic Sleep and Onirism from Colibacillary Intoxication H Baruk—p 278

Value of Queckenstedt-Stookey's Test in Nervous Diseases—Roger and Alliez studied the manometric curves obtained by Stookey's method of eliciting and registering the Queckenstedt sign in many diseases of the central nervous system. In normal persons the pressure of the cerebrospinal fluid rises from 30 to 40 cc in from ten to twelve seconds after compression of the jugular vein. Its descent does not exceed fifteen seconds. In pathologic conditions there may be complete block of the subarachnoid passages, in which case compression of the jugular vein produces no rise of pressure or only a few centimeters. Partial block exists when the pressure of the cerebrospinal fluid rises only 15 cc in twenty seconds and requires more than twenty-five seconds to descend to its initial level. Cases in which intermediate curves are obtained must be considered doubtful. In spinal compression the block is almost always complete, whether the compression is due to Pott's disease, cancer of the spine, pachymeningitis or similar conditions, it may be partial in the early stage of a spinal tumor or a recent, slight compression. Block probably depends not only on the volume of the tumor but on the arachnoid reaction associated with it. In a tumor without congestive reaction, block may be absent. Partial block is much more frequent in arachnoiditis than in compression from any other reason. Chronic myelitis and multiple sclerosis never produce a complete block, but the rise of pressure of the cerebrospinal fluid is usually retarded, indicating a partial block. Amyotrophic lateral sclerosis and tabes produce only insignificant modifications of the manometric curve. In syringomyelitis the graphs may be normal or depict total or partial block, probably depending on the degree of gliosis and hypertrophy, in radiculitis, on the other hand, the graph is always normal. In spinal diseases the complete block has an absolute value, but partial block must be interpreted in relation to other symptoms. A normal manometric curve does not rule out compression, since certain subarachnoid strictures have little influence on the cerebrospinal fluid. The Queckenstedt-Stookey test usually confirms the roentgenographic results but does not furnish such accurate diagnostic information. In encephalic disease the test must be employed cautiously, as it is not without danger in intracranial hypertension. It may have important therapeutic consequences, as the demonstration of an occipital block is an indication for ventricular puncture in cerebrospinal meningitis as well as in cranial trauma. In the latter case it is essential to know whether a complete or partial block exists before deciding on surgical procedure. In cerebral tumors the high degree of hypertension makes the use of Stookey's method difficult. The test is not modified in epilepsy, Parkinson's disease and dementia paralytica. The test is a valuable supplement to the study of the spinal fluid and to spinal roentgenography in spinal meningeal and encephalic diseases.

Pseudotumoral Syphilis of Spine—Launay and Poumeau-Delille discuss the inconstant action of antisyphilitic therapy in pseudotumoral syphilis of the spine, the term applied by them to syphilitic pachymeningitis, which is generally localized in the lumbar region and which may or may not be associated with syphilitic myelitis. They think that the existence of the myelitis and its mode of reaction to treatment are prime factors in determining this difference in the response of the patient. They report a case that illustrates the dissociated action of treatment in combined meningeal and spinal disease of syphilitic origin. The patient had a syphilitic paraplegia associated with a syndrome of incomplete compression of the dorsal region. This syndrome consisted of intercostal pains of the radicular type, relative albuminocytologic dissociation

and partial block (revealed by the Queckenstedt-Stookey test). Under the influence of antisyphilitic treatment the radicular pains disappeared, the circulation of the cerebrospinal fluid returned to normal and the hyperalbuminosis of the spinal fluid disappeared. From this the authors conclude that the syndrome of compression was probably due to arachnoiditis of the dorsal region which receded following antisyphilitic treatment. The severe paraplegia persisted undiminished despite continued treatment. The unique motor symptoms that persisted must have been due to the subjacent syphilitic spinal sclerosis, which is not amenable to treatment.

Presse Medicale, Paris

41 1585 1600 (Oct 14) 1933

- Treatment of Angina by Certain Amino Acids P Halbron, J Tenormand and P Durrigues—p 1585
 *Study of Circulatory System and Cardiac Function by Registration of Arterial Pressure R Giroux and G Boulitte—p 1586
 *Experimental Colibacillary Catatonia and Colibacillary Psychoses H Baruk—p 1588

Study of Arterial Pressure—Giroux and Boulitte describe a new instrument perfected by the latter, which registers the absolute value of the arterial pressure at each moment of the cardiac contraction in the form of a continuous curve traced on a photographic film. This curve registers the maximum and minimum tensions and the average tension. The method can be applied to different arteries, permitting a precise study of the circulatory system of the normal and pathologic person. The essential part of the apparatus is a new type of manometric and optic oscillograph, which is linked to the needle puncturing the artery by a tube containing an anticoagulant. The amplification is considerable (about 20,000) because the displacements are extremely weak and the movements of the anticoagulating fluid through the lumen of the needle are nil, as are the effects of the viscosity, since the blood does not penetrate into the needle. The movements of the manometric oscillograph are photographed on a film moving at constant speed and marked every one twenty-fifth second by a chronograph, the arterial pressure (in centimeters of mercury) is thus marked on the film along longitudinal lines. Several tracings taken in normal persons and patients with various kinds of heart disease are reproduced but the authors consider it too early to draw general conclusions. The curves of the arterial pressure make it possible not only to study the condition of the arterial system but also to discover modifications throwing light on the functional capacity of the myocardium.

Experimental Colibacillary Catatonia—For several years, Baruk's attention has been drawn to the role of colibacillary infection in the genesis of certain psychoses. He has now succeeded in demonstrating experimentally the role of colibacillary toxin in the genesis of catatonia. By subcutaneous injections of a neurotropic colibacillary toxin (obtained from Vincent) he produced in animals all the signs of catatonia and even symptoms such as negativism and stereotypy. The experimental colibacillary catatonia is especially pronounced in animals with a highly organized nervous system, including cats and some other mammals, and much less perfect in birds. In other vertebrates one can no longer speak of catalepsy or catatonia but only of a torpid state. The fundamental mechanism of colibacillary catatonia appears to reside in a special somnolent action: the colibacillary toxin produces a torpor which, however, even in lower animals, is accompanied by special psychic reactions, such as agitation and emotional and aggressive reaction. These experimental ideas are in harmony with the important role of cataleptic sleep and onirism in human catatonia. The author notes that the results were often inconstant, varying with the age and virulence of the toxin and resulting also from the difficulty of exact dosage of the toxin and of watching the animals continuously for hours or days to detect the sometimes transitory appearance of catatonic states.

41 1661 1624 (Oct 18) 1933

- Tuberculous Contagion Among Nurses E Rist and Marie Simon—p 1601
 Composition of Cerebrospinal Fluid at Level of Occipital Foramen and of Iliac Crests A Barlovatz—p 1602
 *Mode of Action of Phrenicectomy Bonafe—p 1604

Mode of Action of Phrenicectomy—Bonafe calls attention to the importance of distinguishing between the purely

mechanical action of phrenicectomy and the modification of the pulmonary innervation resulting from the unavoidable extirpation of fibers of the sympathetic during phrenicectomy. The rapid healing of severe ulcerating lesions after phrenicectomy is a result of vasomotor action due to the partial sympathectomy, in his opinion, and the congestive attacks, sometimes developing at the base of the lung, the asthmatic and the gastralgic attacks may be due to a vagosympathetic disturbance also resulting from the sympathectomy. A case observed by the author permits the dissociation of the mechanical effects of phrenicectomy and the accessory nervous effects. In a patient with fibrocaceous tuberculosis the accidental eversion of a cervical nerve other than the phrenic (by another surgeon) resulted in the rapid disappearance of the cough and auscultatory signs, although no modification of the movement of the diaphragm and no ascent had occurred. Eversion of the intact phrenic nerve in a second intervention was followed by the customary immobilization and ascent of the hemidiaphragm. The absence of sensory and motor disturbances after the first intervention indicates that the extirpated nerve was an important anastomotic branch of the phrenic with the sympathetic. Probably an unusual anatomic condition permitted the dissociation of the mechanical effects of phrenicectomy and the purely nervous effects, heretofore considered accessory. Among the latter is the postoperative dyspnea. It is usually out of proportion to the ascent of the diaphragm and the extent of the lesions, in this case it was observed after the first intervention. The complex mode of action of phrenicectomy that results from the more or less extensive obligatory sympathectomy demands further study.

Policlinico, Rome

40 565 628 (Oct 15) 1933 Surgical Section

- Postoperative Peptic Ulcer T Blefari Melazzi—p 565
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*Periduodenal Hernias U Papa—p 607
Amount of Lactic Acid in Blood in Experimental Occlusion of Common Bile Duct M Titone—p 618

Periduodenal Hernias—Papa states that 90 per cent of cases of internal hernia are periduodenal. Predisposing causes are abnormal size and depth of the fossas and narrowness of the outlet and abnormality in the position of the vascular arch that surrounds it, proximity of the inferior mesenteric vein to the fold circumscribing the opening, and minor resistance of the peritoneum or greater laxity of the retroperitoneal connective tissue in patients constantly losing weight. The author maintains that the periduodenal fossa forms a recess capable of accommodating an intestinal loop and comparable to the peritoneal inguinal pouch and its remains in oblique inguinal hernia. From this point of view all periduodenal hernias may be considered congenital, despite the intervention of acquired factors capable of gradually distending the small preexisting pouch and transforming it into a true hernial sac. According to most authors, this would be formed at the expense of the primary leaf at the right of the root of the mesentery, between the mesocolic vessels anteriorly and the fusion of the left leaf with the posterior parietal peritoneum. Therefore the anterior wall of the sac would be formed by two peritoneal layers while posteriorly the peritoneum would cover the herniated viscera. It is certain that the denomination of retroperitoneal hernias is incorrect. The contents of periduodenal hernias are almost always the small intestine and its mesentery. The author distinguishes three groups: in the first the symptoms are those of ileus due to strangulation. Hernia may be suspected if there is evidence of an abdominal tumor in the right or left hypochondriac areas; if the sac develops within the transverse mesocolon and more especially if attacks of partial occlusion occur in which the ileus represents the final stage. The author observed that the hernia can be seen in the iliac fossa as it becomes larger. In the second group there are symptoms of gradually increasing intestinal obstruction accompanied by acute attacks of partial obstruction. The alteration in patency of the intestinal tract results in diarrhea, abdominal pains and colics and nausea accompanied by alimentary and biliary vomiting. Abdominal tumor when present may exhibit changes in size depending on intestinal function. Development of hemorrhoids and pres-

ence of blood in the feces are found in connection with circulatory disturbances of the lower mesenteric vessels. Diagnosis cannot be definitely made, but it can be helped by roentgenography. In the third group, objective examination reveals little or at most presents a diffuse abdominal distention. The patients suffer from dyspepsia, pains, a feeling of heaviness lasting several hours after eating, epigastric cramps, nausea, lack of appetite, belching and constipation. These symptoms might well be indicative of gastrectasia, dyspepsia and enteroptosis, as well as gastric and duodenal ulcer. In these cases roentgenologic examination may give an exact diagnosis. A characteristic of this entity, also found in a patient of the author, is the displacement of all the loops of the small intestine high up and to the left, leaving the right and lower quadrant void of barium shadows on roentgen examination. In the author's case the intestine displaced the large curvature of the stomach medially. Roentgenologic evidence suggestive of periduodenal hernia would be the presence of clear zones at definite distances apart above the small curvature and distinct from the gastric shadow.

Semana Médica, Buenos Aires

40 869 972 (Sept 28) 1933 Partial Index

- *Significance of Deep S Wave in Lead I of Electrocardiogram T Padilla and P Cossio—p 869
*Treatment of Abortion A Puntel—p 879
Congenital Diaphragmatic Hernias and Fissures C J Duverges—p 913
Roentgen Investigation of Prematurity by Ossification of Femur at Birth C M Pintos—p 924
Localization and Development of Melanic Cells in Human Cerebellum J Aranovich—p 927
Abdominothoracic Deflection Caused by Noncancerous Pulmonary Disease Case H Basabe—p 933

Significance of Deep S Wave in Lead I—On the basis of an examination of 8,000 electrocardiograms, Padilla and Cossio believe that the presence of a deep S wave in lead I of the electrocardiogram is of diagnostic value indicating organic diseases of the heart. They regard the S wave of the electrocardiogram as deep when its amplitude exceeds from 25 to 30 per cent the greatest amplitude of the initial ventricular complex in any of the three leads. A deep S wave deviated to the right side of the electrical axis indicates a preponderance of the right ventricle, caused usually by a disease of the mitral valve and to a lesser degree by a congenital heart disease or by a pathologic condition of the pulmonary artery. A deep S wave nondeviated to the right, side of the electrical axis indicates in 95 per cent of the cases the presence of a myocardial disease, especially of the mitral valves, or pathologic changes in the coronary arteries, such as those observed in infarct of the myocardium and in angina pectoris. The coexistence of a deep S wave and of a deep Q wave is frequent because the two waves are the expressions of the same electrical phenomenon. A deep S wave represents the final phase of the QRS complex seen in lead I, while a deep Q wave represents the initial phase of the same complex as seen in lead III.

Treatment of Abortion—Puntel reports the results of the management of abortion in a group of 2,219 patients who were treated in a gynecologic clinic during a period of ten years. In this group 147 women were treated for either evitable or inevitable initial abortion. Pregnancy continued in 108, 4 had an incomplete abortion and 35 had a complete abortion. Forty-five women were admitted to the hospital after a complete abortion. These were dismissed after abstention treatment. A group of 2,360 women were admitted to the hospital after a noninfected incomplete abortion. The 2,110 patients in this group who were treated by curettage immediately after their entering the hospital were dismissed after a week's stay in the hospital. The progression of severe anemia caused by the intense hemorrhages in 407 patients in this group was controlled by checking the hemorrhages. A group of 324 patients were admitted with infected abortion without complications. This group is 10.8 per cent of the total number of abortions that were treated. In this group the 255 patients who were treated by curettage immediately after admission were dismissed in good condition sooner than those treated by the abstention treatment. A group of forty-three patients were admitted with infected abortion with complications that is with lesions of

the adnexa or of the parametrium. In this group, eighteen received emergency treatment with instrumental curettage. Only two of the eighteen patients survived the infection and their stay in the hospital was lengthened for several weeks. The rest of the patients in the group of forty-three with infected complicated abortion were treated by abstention and were dismissed in good condition sooner than those who survived among the group that had surgical intervention.

Beitrage zur klinischen Chirurgie, Berlin

158 337-448 (Oct. 18) 1933

Experimental Studies on Immunobiology of Bone Marrow K. H. Erb —p. 337

Cuprotect, a New Nonirritating Odorless Antiseptic for Skin and Mucous Membranes Von Linden, E. Herzberg and E. Guttmann —p. 357

Cheiloplastic Method of Lower Lip V. Sanchis Perpiña —p. 367

Diverticulum of Duodenojejunal Flexure K. Horsch —p. 381

*Osmotherapy in Treatment of Brain Compression A. Buchka —p. 389

Clinical and Experimental Studies on Bacterial Permeability of Intestinal Wall E. Seifert —p. 400

Atypical Obliquely Contracted Pelvis with Protruding Acetabula W. Jaroschy —p. 412

Radiation of Malignant Tumors Before and After Operation H. Rahm —p. 430

Osmotherapy in Treatment of Brain Compression —

Buchka states that the dehydration method of treatment of increased intracranial pressure, introduced by Weed and McKibben and widely adopted in the United States, was not applied in Germany until recently. The purely mechanical explanation of the relation of brain compression to increased blood pressure has given way to the modern theory of irritation of the vasomotor centers as the cause. The author has used the dehydration method in Schmieden's clinic for the last three years in instances of injury to the skull and as a preoperative and postoperative measure in tumors of the brain. This paper is concerned with the results obtained in thirty-six cases of injury to the skull in nineteen of which a fracture of the skull was present. The author has come to discard sodium chloride or magnesium sulphate because of unpleasant by-effects. Since 1931 he has used, exclusively, a 50 per cent solution of dextrose intravenously in doses ranging from 50 to 200 cc. The injection is given slowly, occupying from ten to twelve minutes. No untoward effect, such as rapid fall in the blood pressure, was noted. When rising intracranial pressure is due to a depressed fracture or to a subdural hematoma the only rational treatment is the lifting of the depressed fracture or the ligation of the spurting vessel. Osmotherapy is indicated in cases in which the local symptoms are largely absent and the general symptoms predominate. Of the thirty-six patients treated by osmotherapy, seventeen were symptom free at the end of the treatment and eleven had only slight symptoms. Two died shortly after injury of severe complications, and in six the end-result could not be estimated because of such conditions as epilepsy or psychosis. Histories of four patients are given in whom intravenous injections of dextrose promptly relieved symptoms persisting from two to three weeks after the injury. The author expresses the belief that in cases with difficult localization and predominant general symptoms the method of osmotherapy will replace that of the operation of subtemporal decompression.

Dermatologische Wochenschrift, Leipzig

97 1467-1494 (Oct. 14) 1933

Multiple Tumor Like Skin Nodules of Unknown Origin P. Frank —p. 1467

*Fever Therapy of Female Gonorrhea Experiences in 163 Cases H. Feilchenfeld —p. 1471

Fever Therapy of Female Gonorrhea —Feilchenfeld

employed fever therapy in 163 women with gonorrhea. A bacteriogenic protein preparation was injected intravenously. The aim was to produce a fever of about 40 C (104 F). The total number of injections was from five to six. In patients who, in the course of these injections, reacted with fever of less than 38.9 C (102 F) the therapeutic result was doubtful, unless they still reacted after the fifth or sixth attack. In some cases favorable effects were produced after the first injection. The author advises against a too large number of injections. He generally began with the injection of 0.1 cc

and increased the dose by 0.1 cc each time until 0.6 cc had been reached. Intervals of from four to five days between injections were found most advantageous, since a too rapid succession of injections (intervals of one or two days) may accustom the organism so that the febrile reaction is no longer sufficiently intense. Of the total number of 163 patients, 117 (71.7 per cent) improved and became free from gonococci as the result of the fever therapy. The treatment was effective particularly in refractory gonorrhea of the cervix, and it counteracted inflammatory disturbances of the adnexa. However, open gonorrhea of the mucous membrane of the urethra and of the anus and gonorrhea of the vulvovaginal glands was not influenced by the fever therapy. The author thinks that the therapeutic effect is due primarily to some alteration of the tissues. He thinks that fever therapy is most effective in gonorrhea of the cervix which does not yield to local measures. But since severe complications cannot always be avoided in the course of fever therapy, he advises that it be used only as a last resort.

Deutsche medizinische Wochenschrift, Leipzig

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Innervation of Blood Vessels P. Stohr Jr. —p. 1625

*Electrocardiographic Observations in Acute Myocarditis H. Quincke —p. 1629

Heart Disease and Pregnancy W. Schultz —p. 1632

Studies on Human Venous System Severe Varicosis in Young Person O. Diehl —p. 1635

Velocity of Circulation P. Bielschowsky and K. Lange —p. 1637

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Traumatic Endocarditis Case P. Siebert —p. 1643

Critical Evaluation of Methods Employed in Counting of Thrombocytes K. Baedorf —p. 1643

Mitral Stenosis Following Successive Intoxications with Chlorine Gas H. Pernice —p. 1644

Arrhythmia or Arrhythmia? Bastamer —p. 1646

New Enforcement Regulations on Food Law W. Pfannenstiel —p. 1647

Electrocardiographic Observations in Acute Myocarditis—Quincke combines the description of the course of a myocarditis with a description of the most frequent disturbances in the conduction system of the heart. He shows how the electrocardiographic record of a new myocardial lesion gives a clear insight into the steadily changing disturbances of the cardiac function. In the course of a myocarditis lasting two weeks, all forms of conduction disturbances may appear and disappear again: constant and increasing retardation of the conduction, partial auriculoventricular block, bundle branch block and arborization block.

Klinische Wochenschrift, Berlin

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Neuropathologic Research on Ataxia P. Vogel —p. 1593

Constitutional Anatomic Studies on Development of Various Organs in Rabbits J. A. Hammur —p. 1597

Melanophore Hormone of Hypophysis and Eye A. Jores —p. 1599

*Iodine Combining Capacity of Blood Under Normal and Pathologic Conditions K. Hinsberg and G. Holland —p. 1601

Studies on Pulmonary Circulation Regional Peculiarities of Blood Perfusion Under Normal and Pathologic Conditions E. K. Wolff and R. Klopstock —p. 1602

Physiology of Seminal Vesicles H. Knaus —p. 1606

Differentiation Between Whooping Cough and Influenza Bacilli M. Kasahara —p. 1609

*Experimental Investigations on Action of Milk Injections in Gonococcal Infections A. Buschke and W. Casper —p. 1611

Chronic Intermittent Gastric Volvulus L. von Friedrich —p. 1613

Production of Histamine by Irradiation of Histidine Solution P. Holtz —p. 1613

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Hormone of Suprarenal Cortex and Circulation G. Aorlin and C. R. Skoglund —p. 1614

Acute Cardiac Pulmonary Edema and Its Relation to Pressoreceptors S. Wassermann —p. 1615

Histologic Observation in Skeletal Diseases (Osteitis Deformans Osteitis Fibrosa) L. Michaelis —p. 1619

Iodine Combining Capacity of Blood—Hinsberg and Holland call attention to the important role of the unsaturated fatty acids in intermediate metabolism, in the processes of food resorption, and in the regulation of the cellular function, particularly of diffusion. The unsaturated fatty acids detected so far in the organism are oleic, linoleic, linolenic, arachidic and clupanodonic acids. In order to avoid complications, the

authors determined only the total amount of unsaturated fatty acid. For the extraction they employed Bloor's method, and the bromine additive capacity was determined according to Winkler, but, instead of the iodine number of the extracted fat, they determined the iodine combining capacity, that is, the quantity of iodine bound by the fatty acids from 100 cc. of blood. This quantity is more constant than the iodine number, because it is independent of the total quantity of the lipoids. In the formation of the unsaturated fatty acids the functions of the liver, kidney, intestine, biliary tract, pancreas and thyroid are involved. The authors cite experiments demonstrating that a slight lack of oxygen produces an increase in the unsaturated fatty acids of the blood, while great deficiency of oxygen effects a reduction. The important part played by unsaturated fatty acids in intermediate metabolism is borne out by experiments on pancreatectomized dogs which survived for more than two years without insulin, when lecithin (containing unsaturated fatty acids) was added to their food. This effect could not be produced with saturated fatty acids. The authors determined the quantities of the unsaturated fatty acids in healthy persons and in patients suffering from various disorders. As a rule the iodine combining capacity was increased noticeably in diseases of the liver. Patients having pernicious anemia likewise showed values greater than normal, but a gradual and steady reduction set in under the influence of liver therapy, while discontinuation of the liver therapy again was followed by an increase. The hyperglycemia of diabetic patients could be considerably reduced by lecithin (prepared from egg yolks), and the lecithin was the more effective, the higher its iodine combining capacity.

Action of Milk Injections in Gonococcal Infections—

The therapeutic efficacy of milk injections in gonorrhea and particularly in the metastatic eye disorders induced Buschke and Casper to study the action mechanism of milk injections in animal experiments. Studies on white rats disclosed that prophylactic intraperitoneal injections of milk protect the majority of the animals against a gonococcal infection induced with ten times the lethal dose. This could perhaps be interpreted as indicating an active immunity conferred on the animals by the milk injections. However, the authors point out that milk therapy has no influence on urethral gonorrhea, while it is highly effective in gonorrheal conjunctivitis, and that specific gonococcus vaccines do not influence the metastatic eye diseases of gonorrhea. Thus the action of milk cannot be considered due to the production of a specific immunity. The authors assume that the gonococcus produces certain toxins and that the milk checks the formation of toxin in the organism. By influencing the reticulo endothelial system, it stimulates the leukocytes to phagocytosis and to the formation of protective substances.

Medizinische Klinik, Berlin

29 1395 1430 (Oct 13) 1933

- Strabismus W. Meisner—p. 1395
Treatment of Sterility W. Benthin—p. 1397
Results of Treatment of Tunicular Myelitis in Pernicious Anemia H. Schlichting—p. 1401
Clinical Significance of Autocomplement Titer Contribution to Allergy Problem F. Deutsch and E. Weiss—p. 1402
Contusion Rosette of Len Its Pathogenesis and Its Significance for Expert Testimony in Accidents K. W. Ascher—p. 1405
Phlyctena Erythema Nodosum and Poncet's Rheumatism W. Neumann—p. 1407
Pulmonary Bronchostenosis of Left Side as Sign of Aneurysm of Aorta D. Sucic—p. 1408
Coagulation Band of Weltmann in Tuberculosis D. Rohacova and E. Weichherz—p. 1410
Ménière's Vertigo in Polycythemia A. Bieling—p. 1410
Goethe's Theory of Metamorphosis Its Meaning and Significance in Present Day Biology H. Andre—p. 1411
Surgical Treatment of Injuries of Hand and Fingers (with Exception of Bone Fractures) H. Schmorell—p. 1414

Treatment of Sterility—Benthin maintains that the man is at fault in more than a third of sterile marriages and that this aspect of sterility should be thoroughly investigated before the treatment of the woman is begun. Sterility may exist in case of apparently normal genitalia, because functional disturbances of the ovaries of the accessory organs or of extra-genital organs and constitutional psychic nervous climatic and nutritional influences may eventually cause sterility. Moreover the manner in which the sexual act is performed may be at

fault. The absence of orgasm and of sexual feeling represent important factors. Vaginismus, due to spasticity of the musculature of the pelvic floor, the result of fear, generally can be counteracted by proper explanations. The woman should be told that the vagina can be opened by abdominal muscular pressure. The author describes measures for the prevention of too rapid discharge of the semen from the vagina, such as a prolonged rest and a slight elevation of the pelvis following coitus. He discusses the advisability of dilatation of the cervical canal, insufflation of the uterine tubes, improvement of the woman's general condition, temporary sexual abstinence, treatment with ovarian preparations and artificial impregnation. Myomas of the uterus are less frequently a cause of sterility than is sometimes believed. Their removal is necessary only in case they are of submucous and cervical location, in case they grow rapidly and are multiple, and when they cause distortion of the uterine cavity.

Autocomplement Titer and Allergy—Deutsch and Weiss point out that new serologic methods have stimulated interest in the determination of the normal antibody content of the serum and particularly of the autocomplement titer, but that the nature of the complement is not yet completely understood, for by some it is considered a structural constituent of the serum, by some a protein body and by others a ferment, while at present it is generally considered a functional condition of the serum rather than a distinct body. At any rate, it is certain that the complement in the serum is a normal biologic condition, and the disappearance of the complement in anaphylaxis and the changes it undergoes in various conditions are therefore of great interest. The authors emphasize that the height of the complement titer is largely dependent on the method by which it is determined, for instance, it is important how much time has elapsed since the withdrawal of the blood, in what manner it was stored in the meantime, and at what temperature the test is made. They made their tests four hours after the withdrawal of the serum. The titer is expressed by the quantity of serum that effects complete lysis. Titer values of less than 0.05 cc indicate an increase in the complement, and values in excess of 0.08 cc indicate a reduction in the complement. Inhibition of lysis when 0.2 cc or more of serum is added indicates practically a complete absence of the complement. The authors call attention to reports in the literature, in which the theory is defended that certain forms of rheumatism are not infections but present an allergic condition, which in turn is due to a sensibilization originating in a focus of infection. In the allergic complex, conditions such as polyarthritis, endocarditis and glomerular nephritis present a phase that is accompanied by a disappearance of the complement. There are a number of diseases of varying etiology in which allergic reactions exist, but only if the definition of allergy is taken in the wider sense as given by von Bergmann does it become understandable that a disappearance of the complement exists in such different disorders as atrophy of the liver and allergy, for in both of these processes the protein metabolism is seriously impaired. The authors illustrate the significance of the disappearance of the complement with a case history. Von Bergmann's definition of allergic disorders stresses the significance of endogenous allergens. This author thinks that the intermediate autointoxication of the sensibilized organism presents an important factor in the problem as to why inflammations flare up and subside, whether bacteria play a part in them or not. Observations on the phenomenon of the autocomplement indicate how the knowledge of an allergic inflammation can be utilized in the clinic.

Ménière's Vertigo in Polycythemia—A report in the recent literature about the concurrence of Ménière's vertigo with polycythemia and the disappearance of Ménière's vertigo following the successful treatment of the polycythemia with a high fat diet induces Bieling to report a case of his own observation. The patient a man aged 38, had frequent attacks of vertigo and complained of ringing in the ears. Examination of the blood revealed an erythrocyte count of over six million, a hemoglobin content of 107 and a color index of 0.85. Treatment with a preparation of spleen was instituted in order to counteract the polycythemia. The result of this treatment was that the blood picture became normal and the Ménière vertigo disappeared.

Munchener medizinische Wochenschrift, Munich

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- Surgical Treatment of Gastric and Duodenal Ulcers H von Haberer —p 1577
 Remarks on Diagnosis and Treatment of Polyarthritis and on Infectious Processes of Joints J Neideck —p 1580
 *Intrathoracic and Intra-Abdominal Quartz Lamp Irradiation C Fervers —p 1585
 Hay Fever and Action of Yeast W Vauhel —p 1586
 Neurologic Remarks on Relations of Body to Psychic Processes L R Muller —p 1587
 Fractures of Ribs H Doerfler —p 1591
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 Determinability of Blood Groups on Fresh Blood in Capillaries A Ponsold —p 1594
 Insulin Allergy and Its Influence on Diabetic Metabolism H Nonn —p 1597

Intrathoracic and Intra-Abdominal Quartz Lamp Irradiation—Fervers calls attention to the fact that in recent years efforts have been made to apply ultraviolet rays to parts of the body ordinarily not reached by rays the larynx, the vagina and even the inside of the bladder. The peritoneum has been irradiated with ultraviolet rays in the course of operations. The author devised a new method comparable to this irradiation during a surgical intervention. By puncture, the abdominal and pleural cavities can be subjected to the therapeutic action of ultraviolet rays. The instrumentarium consists of a rod-shaped cold quartz lamp. The shaft of the lamp is silver plated and only 5 cm at the end is left uncovered, so that the rays are emitted only here. The rays are produced by a glowing discharge in the burner, and a transformer keeps the burner cold in the open as well as in the body cavities, so that the temperature of the body is not surpassed. For special purposes the linear burner may be surrounded by a tightly fitting cover of blue or dark ultraviolet glass. The lamp can be connected with any lighting circuit. The intrathoracic and intra-abdominal treatments require pneumothorax and pneumoperitoneum, respectively. The irradiation generally lasts three minutes, after which the small opening is closed with a cutaneous suture or with a clamp.

Sovetskaya Khirurgiya, Moscow

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- Stones in the Liver I G Rufanov —p 623
 *Errors in Diagnosis of Sarcoma of Extremities and of Body P Ya Ilchenko —p 630
 Treatment of Fractures of Patella B Rozov —p 652
 Healing of Postoperative Wound as Influenced by Method of Anesthesia and Suture Material L M Nisnevich and I M Segal —p 663
 Treatment of Panaritium of Palm According to Method of Clapp P M Maksimov Popov and V I Orlov —p 669
 Results of Radical Operation of Femoral Hernia After Method of P A Gertsen M G Lomzov —p 676

Errors in Diagnosis of Sarcoma—Ilchenko states that there were 187 cases of sarcoma of the extremities and of the trunk treated between 1921 and 1931 at the Institute for the Treatment of Tumors in Moscow. In 71 of these a wrong diagnosis was made. 66 were diagnosed incorrectly at various medical institutions prior to admission to the institute, 4 were diagnosed incorrectly at the institute but were recognized later and one received a wrong diagnosis at the institute. The most frequent diagnostic errors included such conditions as sciatica, periostitis, tuberculosis, osteomyelitis, syphilis and the various benign tumors. The hip and the leg furnished the greatest number of wrong diagnoses. The first symptom of sarcoma in 50 per cent of wrong diagnoses was pain, in 31 per cent the tumor, and in 6 per cent, in addition to other early symptoms, elevation of temperature. The following factors contributed to the mistakes in the differential diagnosis: (1) the presence of early symptoms of sarcoma, such as pain and rise in temperature, in a number of conditions of nonblastomatous character, (2) inherent faults in such diagnostic means as roentgen examination or biopsy, or their employment at the wrong moment, (3) diagnosis made on the basis of a single method of investigation, such as roentgen examination or biopsy, without a consideration of the general clinical picture, and (4) deep localization of the growth. The author suggests that the diagnosis of sarcoma should be thought of in the presence of long continued pain in an extremity not yielding to treat-

ment even in the absence of a clinically demonstrable tumor. In his material 80 per cent of sarcomas were mistaken for inflammatory lesions, while in 20 per cent the error was in the reverse order, the inflammatory lesions being diagnosed as sarcoma. Because of similarity in the early symptoms of inflammatory lesions and of sarcoma, physical therapeutic measures particularly massage, should be employed with great caution. In the presence of a tumor the nature of which has not been determined, such therapy is inadvisable.

Finska Lakaresallskapetets Handlingar, Helsingfors

75 829 929 (Sept) 1933

- *Hepatogenic Hemorrhagic Diathesis E A von Willebrand —p 829
 Remarks on Wahlfor's Investigations on Pathogenesis of Choked Disk O Heimonen —p 847
 Gonococcal Sepsis in the New Born Cases B Soderling and S Tenlen —p 856
 Electrical Double Layer of Skin and Excitation Wave in Peripheral Nerves F Leiri —p 863
 *Organic Heart Diseases in Thrombo-Angitis Obliterans and in Raynaud's Syndrome M C Ehrstrom —p 892

Hepatogenic Hemorrhagic Diathesis—Von Willebrand states that his first two cases present a picture in accord with Frank's "hypoleukia splenicohepatica," a syndrome occasionally seen in connection with grave liver insufficiency. He ascribes the origin of the hemorrhages mainly to the pronounced thrombopenia and partly to changes in the blood vessels. In the third case, with seropositive syphilis and aortitis, arsphenamine jaundice and acute atrophy of the liver developed after treatment with neoarsphenamine. The patient had massive hemorrhages with marked jaundice, prolonged bleeding time and delayed retraction of the clot. The pathogenesis of the hemorrhages is chiefly attributed to the disturbance in coagulation, also in part to changes in the blood vessels.

Organic Heart Diseases in Thrombo-Angitis Obliterans—Ehrstrom describes four cases with organic defect in the mitral valve, one combined with thrombo-angitis obliterans, one with vasomotor neurosis, and two with vasomotor neurosis and organic change in the blood vessels. He asserts that changes in the blood vessels in Raynaud's disease and thrombo-angitis obliterans and in septic and some forms of syphilitic angitis may occasionally present similar anatomopathologic pictures. With combined vasomotor symptoms and organic changes in the blood vessels it is extremely difficult to determine which is primary. The combination of organic heart defects, especially mitral defects, with changes in the peripheral vessels makes it probable that the latter occurred secondarily on the basis of pathologic changes of the circulation due to the cardiac defect.

Ugeskrift for Læger, Copenhagen

95 1095 1114 (Oct 5) 1933

- *Mummification of Skin (Decubitus) P Freudenthal —p 1095

Mummification of Skin—Freudenthal reports two cases of skin gangrene resembling necrosis due to pressure (decubitus), one on the radial side of the arm and the other on the volar surface of the underarm. Both are ascribed to a tightening bandage, properly applied but allowed by the patient to remain without attention for several days and transformed by blood or secretion into a firm hard dry compress which compromised the nutrition of the skin.

95 1115 1138 (Oct 12) 1933

- Malignant Case of Lupus Vulgaris Treated with Modified Forms of Arc Light S Lomholt —p 1115
 *Hereditary Multiple Exostoses O Andersen —p 1116

Hereditary Multiple Exostoses—The exostoses in the first case described by Andersen were discovered when the patient, now a man of 25 was 4 years old. In the second case in a girl aged 8 signs of exostoses were noted at the age of 3. The author, like others, suggests the theory that endocrine disorders play a part in the origin of exostoses. Both patients were fat until the age of 2 and have since been thin and unable to gain. About the time of puberty in the first instance some exostoses disappeared and the others stopped growing. Of thirty-seven members in four generations of the family of the second patient, nine have multiple exostoses. Inheritance is thought to depend on a single dominant factor.

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THE EFFECT OF DIURETICS IN DIFFERENT TYPES OF EDEMA

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ROCHFESTER, MINN

Blackall,¹ an English physician, endeavored in 1813 to analyze a series of cases all presenting definite signs of dropsy. He showed that dropsy was due to several different causes. During the last nine years we have in a similar manner studied approximately 200 cases of varied types of edema. Our aim is to present the clinical observations and course of the various diseases in much the same fashion as Blackall, but in addition to give the results of certain biologic, chemical and therapeutic studies. The edema was actually controlled in some cases whereas in others the treatment was unsuccessful. Thus, success or failure to rid the patient of edema could be and was, subjected to critical analysis. We hope that the results reported in this paper will lead to the more general and accurate use of suitable diuretics in the treatment of edema, and possibly to the discovery of further helpful therapeutic agents.

CLINICAL GROUPS

In this study 216 cases in which edema was present, comprising eight different types of disease were considered. These were classified according to diagnosis as represented in table 1. As will be observed in table 2, certain outstanding features were observed in each group.

In this study, renal function, as determined by the value for urea in the whole blood (method of Marshall) and by excretion of intravenously injected phenolsulphonphthalein was normal in the majority of cases. As would be expected more severe renal insufficiency was noted in the cases of chronic glomerulonephritis and of myocardial degeneration associated with diffuse arterial disease.

Protein² was found in the urine in large amounts (graded 3 to 4) in all of the cases of lipid nephrosis and in 92 per cent of the cases of chronic glomerulo-

nephritis. In the other groups, usually only a small amount of protein was found in the urine.

The urine of each patient was examined many times to detect the presence of erythrocytes. If in a given case erythrocytes were never found in any examination, erythrocytes were said to be absent in that case. If, in a given case, erythrocytes were sometimes absent and sometimes present, but never in large numbers, the presence of erythrocytes was graded 0 to 1. If, in a given case, erythrocytes were always present and always in considerable numbers, the presence of erythrocytes was graded 2 to 4. The results are given in table 2.

Hyaline casts were present in varying numbers and were present in all cases of chronic lipid nephrosis and in 96 per cent of the cases of chronic glomerulonephritis. They were present in both cases of myxedema and were less frequently observed in the other groups.

Tests of hepatic function were made in some cases of all groups, results are given in table 2. In only fourteen cases of all the groups was the value for serum bilirubin more than 3 mg in each 100 cc, and in only four cases was there distinct jaundice.

The basal metabolic rate was determined in the cases of four groups (table 2). Estimations were made in six cases in each of the groups of myocardial degeneration and cirrhosis of the liver and with one exception all were normal or above normal.

We previously mentioned that there were thirty-nine cases of glomerulonephritis in which there were alterations in the chemistry of the blood similar to those found in lipid nephrosis. Of these thirty-nine cases, in twenty-one the basal metabolic rate was less than minus 10, and in five of the twenty it was less than minus 20. In seventeen cases the rate was within normal limits, and in a single case it was plus 35, which was thought to be due to coexisting hyperthyroidism. Similar results were obtained in the cases of genuine lipid nephrosis in only three was the basal metabolic rate less than minus 10. Our experience would indicate that the low basal metabolic rate in lipid nephrosis found by Eppinger³ and Epstein,⁴ occurs only in a certain percentage of cases. The most obvious explanation of the decreased metabolism would be that it was due to undernutrition.

TREATMENT

The treatment consisted of the use of diuretics and of control of diet and of intake of fluid. In 96 per cent of all the cases the diet was controlled and contained protein from 40 to 60 Gm and sodium chloride from 1 to 5 Gm daily. The water component of the food

Owing to lack of space this article is abbreviated for publication in THE JOURNAL. The entire article appears in the authors' reprint.

¹From the Division of Medicine, the Mayo Clinic.

²Read before the Section on Pharmacology and Therapeutics at the Eighty-fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

³Blackall, John. Observations on the Nature and Cure of Dropsies. London: Longman, 1813.

⁴During the period the cases were studied, the concentration of the blood was considered the most dependable guide test for estimating renal function. A concentration of more than 45 mg in each 100 cc of whole blood was considered abnormal because averaging normal persons when under a similar regimen to bring about dehydration the value for blood urea rose to 45 mg in each 100 cc.

⁵De determined by the method of Folin. The reaction was a weakly alkaline to red, slightly blue to red.

³Eppinger, Hans. Zur Pathologie und Therapie des Menstruellen Oedems. Berlin: Julius Springer, 1917.

⁴Epstein, A. A. Thyroid Therapy and Thyroid Toxicity in Chronic Nephritis. J. A. M. A. 57: 913-917 (Sept. 18) 1926.

TABLE 1—Types of Cases

Diagnosis	Cases			Age Years				Necropsy Cases
	Males	Females	Total	Range	Mean	Median *	Standard Deviation †	
Subacute or chronic glomerulonephritis with edema	49	21	74	6-61	34.2	32	37.0	12
Chronic lipid nephrosis	10	4	19	13-72	37.7	2	38.7	1
Myocardial degeneration with edema associated with								
Diffuse arterial disease and hypertension	19	8	27	20-72	34.7	30	33.7	2
Chronic valvular disease	1	4	5	30-49	37.2	35	37.7	
Periculous anemia	1	1	2	62				
Hepatic insufficiency with ascites								
Portal or biliary cirrhosis of liver	20	14	34	19-76	31.6	32	52.9	5
Syphilitic cirrhosis	2	2	4	40-57	47.0	46	47.7	
Cirrhosis with Bant's disease	1	4	5	17-64	44.0	47		2
Intra-abdominal malignancy	2	0	2	17-60	44.4	44	46.4	1
Polyserositis	3	6	9	19-65	33.4	29	36.1	
Myxedema		2	2	5-60	57.0			
General edema of indeterminate origin			8	9-69	43.3	42	46.9	
Total	139	77	216					23

* Median the age above and below which half the cases fall

† Standard deviation measures the variability of the individual values

salicylate¹⁰ These all were used singly and in combination The diuretics most frequently selected, as will be noted in table 3, were ammonium chloride, ammonium nitrate and organic preparations of mercury Derivatives of caffeine were used extensively, they were employed in 66 per cent of the cases of myocardial degeneration However, in a number of cases of the different groups in which the values for blood urea were elevated and in which acid salts and organic compounds of mercury were contraindicated, theophylline calcium-calcium salicylate, theobromine and aminophylline were frequently effective As has been demonstrated previously by Keith, Barrier and Whelan,¹¹ the organic compounds of mercury act more energetically as diuretics in combination with the acid salts ammonium chloride and ammonium nitrate, and the substances were employed in this combination in most of the cases of all groups Engel and Epstein¹² also have found that ammonium bromide and decholin may enhance the diuresis caused by mercury Shelling and Tarr¹³ have shown a similar effect with magnesium sulphate injected intramuscularly Calcium chloride was used to a less extent, and chiefly in the cases of chronic glomerulonephritis and chronic lipid nephrosis Ammonium chloride, ammonium nitrate or calcium chloride were given in doses of from 6 to

TABLE 2—Diagnostic Features

Diagnosis	Total Cases	Edema		Ascites Cases per Cent	Basal Metabolic Rate			Dye Test of Hepatic Function		Blood Cases per Cent		Protein		Urine			Phenolsulphonphthalein Above 40 per Cent Cases per Cent		
		Grade	Cases per Cent		Cases Tested	Normal Cases, per Cent	Below Normal Cases, per Cent	Cases Tested	Retention Grade	Hemoglobin Above or Below 70 per Cent*	Urea Normal Content	Grade	Cases, per Cent	Sediment Cases per Cent Erythrocyte test					
														Absent	Grade 0-1	Grade 2-4			
																		Hyaline Casts	
Subacute or chronic glomerulonephritis	74	24	80	61	40	40	50	16	0	1-77	72	34	92	11	70	8	96		64
Chronic lipid nephrosis	19	24	79	31	14	79	21		1	0	+90	90	14	100	68	100	0	100	54
Myocardial degeneration	33	24	91	82					17	1-4	+64	76	62	79	24	7	0	64	70
Hepatic insufficiency	62	13	82	100					3	1-4	+71	89	0.1	72	66	24	8	54	71
Intra abdominal malignancy	7	13	57	100					3	1-4	+71	100	0.2	100	100	0	0	45	71
Polyserositis	11	13	64	100					10	0-4	+64	100	0.2	100	33	50	9	45	
Myxedema	2	13	100	100	2	0	100		1	0	+100	88	0.1	100	100	0	0	100	50
Indeterminate edema	8	23	87	75	6	50	50		7	0	+87	87	0.2	100	75	100	0	85	62

* Interpretation of quantities in the column —77 = 77 per cent of cases in which value for hemoglobin was less than 70 per cent +90 = 90 per cent of cases in which value for hemoglobin was more than 70 per cent and so on

† Interpretation of quantities in the column is given in the text

‡ No retention in three cases

§ No retention in one case

ingested was limited to from 800 to 1,400 cc daily, in all of the cases of glomerulonephritis, lipid nephrosis, hepatic insufficiency, intra-abdominal malignant conditions, polyserositis, and general edema of indeterminate origin

The same limitation on the water component of the food was applied in 70 per cent of the cases of heart disease and in one of the two cases of myxedema The intake of extra fluid in the form of water and other beverages was limited to 800 cc, so that the total intake of fluid amounted to from 1,600 to 2,200 cc in 75 per cent of all cases

The diuretics most commonly employed were ammonium chloride, ammonium nitrate, calcium chloride, the organic compounds of mercury, mersalyl and merbaphen,⁹ and the derivatives of caffeine theobromine, theocin, aminophylline and theophylline calcium-calcium

9 Saxyl Paul and Heilig Robert Ueber die diuretische Wirkung von Novasuril und anderen Quecksilberinjectionen Wien klin Wchnsch 33 943 944 (Oct 21) 1920

10 Gm daily,¹⁴ and as much as 600 Gm of ammonium chloride or ammonium nitrate was given during a period of treatment The derivatives of caffeine were given in the usual doses, at times singly and at other

10 Other substances which sometimes cause diuresis were occasionally employed For example thyroid extract⁸ parathyroid extract (McCann W S The Diuretic Action of Parathyroid Extract Collip in Certain Edematous Patients J A M A 90 249 253 [Jan 28] 1928) and compounds of bismuth (Hanzlik P J Bloomfield A L Stockton A B and Wood D A Diuresis from Water Soluble Bismuth Sodium Tartrate in Subjects With and Without Edema J A M A 92 1413 1416 [April 27] 1929 Mehrtens H G Hanzlik P J Marshall D C and Brown H S Bismuth as a Diuretic and 91 223 225 [July 28] 1928 Stockton A B Bismuth Diuresis and the Blood and Urinary Changes Under Clinical Conditions Arch Int Med 50 142 149 [July] 1932) but our data are meager and are not included in this report

11 (a) Keith N M and Whelan Mary A Study of the Action of Ammonium Chloride and Organic Mercury Compounds J Clin Investigation 3 149 202 (Oct) 1926 (b) The Combined Diuretic Action of Certain Acid Producing Salts and Organic Mercury Compounds J Am Phys 41 181 189 1926 (c) Keith N M Barrier C W and Whelan Mary The Diuretic Action of Ammonium Chloride and Novasuril in Cases of Nephritis with Edema J A M A 85 799 806 (Sept 12) 1925

12 Engel Karl and Epstein Tibor Die Quecksilber diurese Ergebn d inn Med u Kinderh 40 187 261 1931

13 Shelling D H and Tarr Leonard The Combined Use of Magnesium Sulphate and Salyrgan as a Diuretic in Cardiac Edema M J & Rec 131 365 366 (April 2) 1930

14 Larger doses were occasionally given Two patients received 18 Gm of calcium chloride and three patients ammonium nitrate 12 Gm daily

times in combination with organic compounds of mercury. Organic compounds of mercury, in the form of merbaphen or mersalyl, were always given in a small initial dose of 0.5 cc, and if no untoward reactions occurred, 2 cc was given at intervals of three days or more thereafter. Merbaphen was injected beneath the skin, into the muscles and into the veins, but mersalyl only intravenously. As much as 35.5 cc of the organic compounds of mercury was given to one patient.

EFFECT OF TREATMENT

Immediate—On the whole, a summary of the immediate effect of treatment was gratifying (table 4). The average loss of weight varied somewhat in each group studied and was greatest in the cases of myocardial degeneration.

An ineffectual result of treatment was indicated by slight or no diuresis, inability to reduce edema materially, or progressive course of the disease. Such results occurred most often among the cases of intra-abdominal malignancy.

which was observed during treatment followed the administration of organic mercury.

The occurrence of diarrhea usually followed the administration of merbaphen but sometimes followed the administration of mersalyl. This was not persistent and subsided in a day or two after cessation of the administration of organic compounds of mercury.

Methemoglobinemia, as evidenced by cyanosis and the finding of methemoglobin in the blood, was noted only with the administration of ammonium nitrate. In only one case did it seem to be a serious complication.¹⁵

With reactions resulting both in renal insufficiency and in the production of acidosis, a more serious problem presented itself. In eighty-nine of the 216 cases (table 5), increase in the value for blood urea developed during treatment. In thirty-four of the eighty-nine cases, the value for blood urea was more than 45 mg in each 100 cc on admission, in twenty-eight of these the concentration fell to normal before the patients left the hospital. In fifty-three of the eighty-

TABLE 3—Treatment*

Diagnosis	Total Cases	Ammonium Chloride		Calcium Chloride		Ammonium Nitrate		Organic Compounds of Mercury		Derivatives of Caffeine	
		Cases per Cent	Average Amount Cm	Cases per Cent	Average Amount Gm	Cases per Cent	Average Amount Gm	Cases per Cent	Average Amount Cm	Cases per Cent	Average Amount Gm
Subacute or chronic glomerulonephritis	74	49	102	11	103	57	164	68	8.0	71	11.1
Chronic lipid nephrosis	19	77	99	26	88	47	144	68	4.6	21	33.1
Myocardial degeneration	7	42	1.7			26	123	82	6.9	66	6.3
Hepatic insufficiency	62	76	1.8	2	28	29	98	98	10.1	27	6.1
Intra-abdominal malignancy	7	70	89			28	69	100	5.0	14	5.0
Polyserositis	11	57	177			57	132	91	10.8	46	9.3
Myxedema	2	50	28			50	58	100	6.6		
Indeterminate edema	8	75	124	12	153	37	57	62	5.3	12	1.4

* The diet is outlined in the text.

TABLE 4—Immediate Effect of Treatment

Diagnosis	Total Cases	Duration of Treatment Average Days	Volume of Urine 2,000 Cc or More in 24 Hours Cases per Cent	Edema After Treatment		Loss of Weight Kg		Immediate Results of Treatment	
				None Cases per Cent	Grade 1 or Less Cases per Cent	Maximium	Average	Good Cases per Cent	Failure Cases per Cent
Subacute or chronic glomerulonephritis	74	41	65	63	27	27	11.0	67	33
Chronic lipid nephrosis	19	27	58	79	16	38	12.0	100	
Myocardial degeneration	7	1	94	79	21	62	21.0	79	12
Hepatic insufficiency	6	1	82	90	5	24	12.0	80	20
Intra-abdominal malignancy	7	21	57	71	14	17	12.0	43	47
Polyserositis	11	33	91	73	27	37	14.0	64	36
Myxedema	2	2	50	50	0	12	8.0	70	
Indeterminate edema	8	22	75	50	37	23	10.0	87	13
Total	216		75	75	19		12.1	73	27

Toxic Reactions—Untoward reactions both local and general were noted in certain cases of all the groups studied. They are recorded in table 5. One of the toxic reactions, increased renal insufficiency, was evidenced by increase in concentration of blood urea and lowering of the return of phenolsulphonphthalein. Another toxic reaction was acidosis. Local necrosis, stomatitis, gross hematuria and diarrhea could be traced to the administration of organic compounds of mercury. Local necrosis was observed in three cases following injection, intramuscularly or subcutaneously of mersalyl. When given intravenously this did not occur. Local necrosis did not occur in any instance following intramuscular or subcutaneous injection of merbaphen.

Stomatitis, although uncommon, appeared in nine cases following administration of organic compounds of mercury and more frequently following the use of merbaphen than the use of mersalyl. Gross hematuria

in nine cases the value for blood urea returned to normal before dismissal of the patients.

It often has been observed, with the administration of the acid salts ammonium chloride or ammonium nitrate, together with organic compounds of mercury, that there will be marked diuresis, associated with a rise in concentration of blood urea and, especially when ammonium chloride is given, a fall in the carbon dioxide combining power of the plasma. Whether the renal insufficiency as shown by the rise in value for blood urea, is due in these cases to the acidosis to the dehydration or to the direct irritative action on the renal epithelium or to a combination of these factors has not been definitely determined. Usually this reaction is seen in cases in which there previously has been renal injury as evidenced by elevated values for urea and low output of phenolsulphonphthalein.

¹⁵ Euseman, C. B. and Keith, N. M. Treatment of Methemoglobinemia Following Administration of Ammonium Nitrate. *M. Clin. North America* 12: 1487-1496 (May) 1929.

Decreased Alkali Reserve¹⁶—The carbon dioxide combining power of the plasma was usually normal in these cases on admission. The well known acidosis that is known to be produced by acid salts¹⁷ led us to make, after administration of these salts, frequent determinations of the bicarbonate reserve of the plasma

TABLE 5—Toxic Reactions to Treatment

Diagnosis	Total Cases	Local Necrosis Cases	Stomatitis Cases	Gross Hematuria Cases	Diarrhea Cases	Methemoglobinemia Cases	Increased Renal Insufficiency* Cases	Per Cent
Subacute or chronic glomerulonephritis	74	3	2	5	3	2	47	64
Chronic lipid nephrosis	19	0	0	1	0	0	4	21
Myocardial degeneration	33	0	12	0	1	0	5	24
Hepatic insufficiency	62†	0	4	0	7	0	23	37
Intra abdominal malignancy	7	0	0	0	1	0	2	28
Polyserositis	11	0	0	0	0	1	3	27
Myxedema	2	0	0	0	0	0	1	50
Indeterminate edema	8	0	1	0	0	1	1	12
Total	216	3	9	6	12	4	89	41

* As determined by the value for blood urea. In the majority of cases the excretion of phenolsulphonphthalein also was determined and was found decreased.

† One case of nitrite like reaction, three cases of toxic dermatitis.

in 109 of the cases in this series (table 6). The intake of food and fluid was controlled in the manner mentioned previously. It was the rule to estimate the value for urea, the chloride and the bicarbonate reserve from the same specimen of blood. This procedure was a test of certain effects of an excess of inorganic acid on the metabolism of patients with edema, it also gave us information as to the relative action of these acid radicals in different diseases, as for example in chronic glomerulonephritis, myocardial degeneration, and cirrhosis of the liver. The total amount of acid-producing salt exhibited before the sample of blood was withdrawn varied from 9 to 412 Gm (the daily amount averaging from 5 to 10 Gm). The chlorides of ammonium and calcium caused a distinct shift in the acid direction much more consistently than ammonium nitrate. This fact we had noted in previous work.¹⁸ So-called chloride acidosis, in which the plasma chloride was almost invariably increased, was produced in fifty-six cases by doses of from 9 to 412 Gm of ammonium chloride or calcium chloride, and in eight of these, all cases of glomerulonephritis, the carbon dioxide combining power of the plasma decreased markedly to 20 volumes per cent or less. On the other hand, ammonium nitrate in amounts of from 28 to 78 Gm produced a moderate fall in the carbon dioxide capacity of the plasma in only four cases. The relative occurrence of acidosis among fifty-eight cases of the different types of edema are given in table 6. Acidosis occurred in a high percentage of cases of glomerulonephritis, indeterminate edema, abdominal malignancy and hepatic

insufficiency, and much less frequently in cases of cardiac disease and lipid nephrosis. Acidosis also seemed more likely to occur in cases in which there was hepatic and myocardial injury, when complicated by renal insufficiency. In three cases of hepatic insufficiency the plasma carbon dioxide combining power fell to less than 30 volumes per cent and serious renal involvement was indicated by concentrations of blood urea of from 72 to 89 mg in each 100 cc. In only one case of this series was the acidosis severe enough to produce respiratory difficulty.¹⁹ In this, a case of glomerulonephritis, following the giving of 25 Gm of ammonium chloride in five days, typical Kussmaul breathing developed, the carbon dioxide combining power of the plasma decreased to 9 volumes per cent, and the value for blood urea rose from 109 to 276 mg in each 100 cc. This patient's acidosis, fortunately, was successfully combated by intravenous injection of sodium bicarbonate. We believe that marked acidosis, such as occurred in this case, can be avoided, since this severe condition has subsequently never developed in any of our cases.

Usually the degree of acidosis present produces no respiratory or other untoward symptoms.¹⁹ In some cases the reduction in plasma carbon dioxide is only slight after continuous giving of large doses of ammonium chloride. This fact suggests that the body may, under these conditions, gradually develop a satisfactory buffer mechanism to this salt. The observations of Keith and Whelan, that the early acidosis may clear and the carbon dioxide combining power of the plasma

TABLE 6—Effect of Acid Salts on Carbon Dioxide Combining Power and Urea of Plasma

Diagnosis	Patients Given Acid Salts	Carbon Dioxide Combining Power Above 40 per Cent by Volume		Carbon Dioxide Combining Power Below 40 per Cent by Volume	
		Urea Below 40 Mg per Cent Cases	Urea Above 40 Mg per Cent Cases	Urea Below 40 Mg per Cent Cases	Urea Above 40 Mg per Cent Cases
Subacute or chronic glomerulonephritis	32	5	2	11	14
Chronic lipid nephrosis	1	0	0	1	0
Myocardial degeneration	12	6	2	2	1*
Hepatic insufficiency	40	13	10	8	5
Intra abdominal malignancy	7	0	0	1	2
Polyserositis	11	0	0	2	0
Myxedema	2	0	1	0	0
Indeterminate edema	7	1	0	4	1
Total	109	34	17	29	26

* In three cases plasma urea not estimated. Fifty-six patients with acidosis received chloride from 9 to 412 Gm and organic mercury from 0.5 to 21.5 cc. Four patients with acidosis received ammonium nitrate from 28 to 78 Gm and organic mercury from 1 to 10.5 cc.

return to normal and the finding of Dennig Dill and Talbott²⁰ of similar changes in the pH of arterial blood, support such a view. In twenty-nine of our cases in which acidosis developed, the concentration of blood urea was normal, whereas in twenty-six there was an associated rise in the value for blood urea ranging from 46 to 130 mg in each 100 cc. If we omit the case of severe acidosis mentioned in which the value for blood urea rose to 276 mg in each 100 cc. A marked rise in the value of blood urea, along with acidosis, following administration of ammonium chloride or calcium

16 It is recognized that a shift in acid-base equilibrium toward the acid side may be compensated in the blood plasma and still the pH of the urine be strongly acid. We have arbitrarily decided in this paper to consider acidosis present only when the carbon dioxide combining power of the blood plasma was below 40 volumes per cent. When the carbon dioxide combining power of the plasma was more than 40 volumes per cent compensated acidosis was said to exist when less than 40 volumes per cent the acidosis was said to be uncompensated.

17 (a) Gamble J. L., Blackfan K. D. and Hamilton Bengt. A Study of the Diuretic Action of Acid Producing Salts. *J. Clin. Investigation* 1: 359-388 (April) 1925. (b) Haldane J. B. C. Experiments on the Regulation of the Blood's Alkalinity. *II. J. Physiol.* 55: 263-275 (Aug.) 1921. (c) Keith N. M., Barrier, C. W. and Whelan Mary. Treatment of Nephritis and Edema with Calcium. *J. A. M. A.* 83: 666-670 (Aug. 30) 1924.

18 Keith N. M., Whelan Mary and Bannick E. G. The Action and Excretion of Nitrates. *Arch. Int. Med.* 46: 797-832 (Nov.) 1930.

19 Keith and Whelan^{18a}, Morris, Noah and MacRae. *Olve Metabolic Reactions to Acidosis Produced by Ammonium Chloride*. *Arch. Dis. Child.* 5: 207-228 1930.

20 Dennig H., Dill D. B. and Talbott I. H. Bilanzuntersuchung einer Salmiakazidose. *Arch. f. exper. Path. u. Pharmacol.* 14: 4: 297-310 1929.

chloride is a definite contraindication to the further use of these substances

In fifty-one cases, or 47 per cent of the 109 cases in which acid salts were given, the carbon dioxide capacity of the plasma was more than 40 volumes per cent at the time of the analysis of blood. In other words, partial or complete compensation for the acidosis had taken place in the plasma. In thirty-four of these fifty-one cases there was no rise in concentration of blood urea, whereas in seventeen cases it was increased from 46 to 95 mg in each 100 cc. Thus, in a small group in which the acidosis is compensated renal insufficiency does occur, but fortunately it is as a rule, of short duration. It is of interest to point out that early clinical observations indicated that acid salts could be given in large doses to patients with anasarca without apparent toxic effect. There is now chemical evidence that this is often a fact. Conversely, certain patients of this series, with persistently small or moderate amounts of edema when given acid salts quickly gave evidence of acidosis and renal impairment.

Organic compounds of mercury were given to many of these patients in doses of from 0.5 to 21.5 cc (from one to eleven injections) during the period of ingestion of acid salts. The injections of mercury did not appear to enhance the acidosis, nor did the presence of moderate acidosis seem to increase the frequency of toxic effects from mercury. In a single case following the giving of 0.5 cc of merbaphen when marked acidosis was present the carbon dioxide combining power had been reduced to 13 volumes per cent by administration of ammonium chloride, and severe stomatitis and convulsions developed. Several days later this patient, while taking ammonium nitrate, did not give evidence of acidosis, and injection of 2 cc of mersalyl caused no rise in the value for blood urea or other abnormal conditions.

The results of this study of acidosis occurring in various types of edema due to administration of acid salts indicate that the acidosis itself only rarely causes serious toxic effects and that these can be reduced to a minimum when the cases are suitably selected and the administration carefully controlled. Acidosis was produced in several cases in which the diuretic response was satisfactory and the subsequent course remarkably good. Such a result was obtained in our first case in which ammonium chloride was administered nine years ago.¹ The patient, a woman, continues to be free from edema and has excellent general health. The dose of chloride should be carefully estimated and its effect on the carbon dioxide combining power and the chloride and urea content of the blood plasma should be observed from time to time. Severe acidosis thus can be avoided. Ammonium nitrate has much less tendency than ammonium chloride to produce acidosis, therefore it can be used in a larger series of cases and especially in those in which administration of chloride might be contraindicated.

Ultimate Course.—A follow-up investigation of the 216 patients of all groups showed that 104 or approximately half, returned one or more times for further observation. The usual reasons for returning were for reexamination or because of recurrence of edema. Two patients returned nine times each. Review disclosed the results recorded in table 7.

The highest mortality has been among the cases of intra-abdominal malignancy with 85 per cent deaths. Of the patients with hepatic insufficiency 79 per cent died and of those with glomerulonephritis the per-

centage of deaths was 68. Sixty-four per cent of the patients with myocardial degeneration died. Only one patient with nephrosis died, in this case, acute septicemia developed following tonsillectomy. Neither of the patients with myxedema and only two of the patients of the indeterminate group, died.

COMMENT

The most constant effect of the therapeutic measures employed in this study was the production of marked diuresis in all types of edema. Similar results have been reported in types of edema not included in this paper, as, for example by de Takats²¹ in acute edema caused by thrombophlebitis. The edema frequently disappeared and the patient's subsequent course was satisfactory. This happy result occurred very often in cases of hypoid nephrosis, in the group of cases of indeterminate edema, and in a limited number of cases of myocardial degeneration, cirrhosis of the liver and chronic glomerulonephritis. Other patients, in spite of only temporary decrease in the edema and the necessity of continuous treatment, derived much comfort. However, in many cases in which there was serious cardiac,

TABLE 7—Ultimate Course

Diagnosis	Total Cases	Known Living 4 Years After Onset		Known Dead Duration of Life After Onset		Standard Deviation Months
		Cases*	Per Cent	Cases	Mean Months	
Subacute or chronic glomerulonephritis	74	15	20	59	35.3	43.0
Chronic hypoid nephrosis	19	11	58	8	2.0	
Myocardial degeneration	24	1	4	23	40.3	35.0
Hepatic insufficiency	62	10	16	52	23.5	31.6
Intra-abdominal malignancy	71	1	1	70	5.0	5.9
Polyserositis	11	2	18	9	41.9	49.0
Myxedema	2	2	100	0		
Indeterminate edema	8	6	75	2	9.0	
Total	216	53	24	163		

* This represents a minimum figure since recent cases (onset less than four years ago) patients still alive are not included.

† Unable to trace one patient.

‡ Includes one patient who lived seven years.

§ One death due to coronary occlusion and one following third laparotomy.

renal or hepatic injury, even with subsidence of the edema the usual progressive course of the disease was not altered.

Obvious toxic effects, such as stomatitis, diarrhea and dermatitis, occurred very infrequently. They occurred relatively more often in cases of hepatic insufficiency than in any other single group of cases and usually followed injections of merbaphen. The most frequent toxic effect was definite renal insufficiency, which was present in approximately half the cases. With this renal insufficiency, clinical symptoms of a toxic nature were usually absent. As one would naturally surmise renal insufficiency occurred most frequently in cases of glomerulonephritis, but it also occurred in a considerable number of cases of hepatic disease. Fortunately in the majority of instances it was a temporary dysfunction and the value for blood urea fell to the normal concentration and the excretion of phenolsulphonphthalein rose before dismissal of the patient. On the other hand the renal impairment of 16 per cent of all patients treated was of longer duration and was still present at dismissal. Severe acidosis

21 de Takats (Czsa. The Management of Acute Thrombophlebitis. *Journal of the American Medical Association* 100: 3, (Jan. 7) 1913.

when caused by ingestion of ammonium chloride or calcium chloride, may be accompanied by marked renal insufficiency. By careful administration of these salts, such an untoward event can be prevented. It is well to point out that in the compensated acidosis that so frequently is present after these acid salts, particularly ammonium nitrate, have been taken, mild renal impairment does sometimes occur but it disappears quickly when the administration of the salt is discontinued. Dehydration resulting from both a low intake of water and a large output of water from continuous diuresis is a possible etiologic factor in the production of this temporary renal insufficiency. In uncomplicated cases of myocardial degeneration, toxic reactions seem less likely to occur than in cases in which there are either renal or hepatic lesions. This finding is in agreement with previous observers.²²

Organic compounds of mercury, administered in large and rapidly repeated doses, are undoubtedly toxic to the kidneys and other organs.²³ When they are employed as advocated in this paper, we have seen surprisingly little evidence of definite toxicity. Mersalyl is the compound of choice. When gross hematuria did take place after an injection, in several instances the patient later tolerated an equal or larger dose without apparent harm. By using the urea clearance test, Pollard²⁴ has shown that merbaphen depresses the capacity of the kidney of the normal person to excrete urea. Page,²⁵ on the other hand, after the administration of organic compounds of mercury, has found no change in results of the urea clearance test in a small group of cases in which arteriosclerotic kidneys and chronic glomerulonephritis were present. Further studies with this test, and with other more sensitive determinations than that of concentration of blood urea and excretion of phenolsulphonphthalein, are necessary for a final conclusion. However, two facts are important in this discussion: (1) that when a mild degree of renal insufficiency develops after the administration of mercury it is of very short duration, and (2) that many patients with edema have tolerated large amounts of mercury, given at regular intervals, with subsequent satisfactory renal function.

Undoubtedly a shift in acid-base equilibrium toward the acid side occurred in all cases in which a sufficient dose of an acid-producing salt was given. Those salts which contain chloride produced it in greater degree and more rapidly than those which contain nitrate. Part of the diuretic effect of these salts is probably due to this change in the acid-base equilibrium, so that the presence of compensated, or even moderately uncompensated, acidosis is assumed to be a desirable action. Too marked acidosis may on the other hand, cause dangerous effects. When demonstrable renal insufficiency is present, administration of acid salts must be carried out cautiously. In many cases in which this treatment was given, the subsequent diuresis was very

beneficial. In other cases the development of more marked renal failure contraindicated their further use.

A large amount of both laboratory and clinical investigative work has been done on the relation of the concentration of plasma protein to the formation of edema. In this series of cases diuresis apparently occurred just as often in cases in which the value for plasma protein was low as in those in which the value was normal. As a matter of fact, our cases of lipoid nephrosis in which the value for plasma protein was lowest responded well to diuretics. In cases of lipoid nephrosis with very stubborn edema, Hartmann, Senn, Nelson and Perlev²⁶ have injected solution of acacia intravenously, thus raising the osmotic pressure of the plasma, with some encouraging results. Diets⁸ high in protein given to increase the protein in the plasma, and secondarily to decrease the edema, have not been effective in our experience. A diet comparatively low in protein, in our study at least, did not prejudice the diuretic action of the drugs employed.

In any consideration of the action of these diuretic drugs, the general and renal effect must be considered. The acid chlorides alter the acid-base equilibrium and raise the level of plasma chlorides. Both factors aid diuresis.²⁷ In cases in which the value for plasma chloride is low, acid chlorides raise it to the effective diuretic level.²⁸ Nitrate apparently can cause a fall in the concentration of plasma chloride, which in turn is followed by a diminishing diuresis. This fact explains the beneficial substitution of chloride for nitrate. Too much chloride may give rise to renal insufficiency. Could this be caused by too great a shift in the p_H of the renal cells, as suggested by Steglitz's²⁸ experiments? A balanced chloride action is thus desirable for developing its optimal general and renal diuretic effect. Blumgart, Gilligan, Levy and Brown²⁹ have shown that metaphyllin may be an ineffectual diuretic agent when the value for sodium in the plasma falls to a low concentration, even though the value for chloride be normal. When it was increased by the ingestion of a sodium salt, spontaneous polyuria occurred. They expressed the belief that an optimal concentration of sodium, in addition to that of chloride in the plasma, is important for diuresis and may in part be the reason for the production of diuresis by alkaline salts. Melville and Stehle,³⁰ in their experimental work with compounds of mercury, stressed their general action on tissue because there is a definite latent period before diuresis begins. Bieter's³¹ experiments on the action of mercury in plasma, and Engel's and Epstein's observations in the absorption of isotonic solution from the skin, also suggest a general effect on tissue. The experiments of Govaerts,³² and of Christian and Bartram,³³ on the other hand, emphasize the marked renal action in diuresis caused by compounds of mercury.

Recent advances in renal physiology suggest that different types of diuretics might have specific actions on

22 Crawford J. H. and McIntosh J. F. Observations on the Use of Novasurol in Edema Due to Heart Failure, *J. Clin. Investigation* **1**: 333-338 (April) 1925.

23 Johnstone B. I. and Keith H. M. Toxicity of Novasurol (Merbaphen). Its Action on the Kidney of the Rabbit. *Arch. Int. Med.* **42**: 189-216 (Aug.) 1928. Keith H. M. and Johnstone B. I. The Action of Merbaphen (Novasurol) on the Kidney of the Dog. A Combined Functional and Pathologic Study. *ibid.* **44**: 438-454 (Sept.) 1929. Nonnebruch W. Ueber Diurese-Ergebnisse im Med. u. Kinderh. **26**: 119-206 (1924). Rowntree L. G., Keith H. M. and Bartram C. W. Novasurol in the Treatment of Ascites in Hepatic Disease. *J. A. M. A.* **85**: 1187-1193 (Oct. 17) 1925.

24 Pollard W. S. The Effect of Some Diuretics on the Urea Excreting Capacity of the Kidney. *Am. J. Physiol.* **55**: 141-148 (May) 1928.

25 Page I. H. The Action of Certain Diuretics on the Function of the Kidney as Measured by the Urea Clearance Test. *J. Clin. Investigation* **12**: 737-739 (July) 1933.

26 Hartmann A. F., Senn M. J. E., Nelson M. V., and Perlev A. M. The Use of Acacia in the Treatment of Edema. *J. A. M. A.* **100**: 251-254 (Jan. 28) 1933.

27 Curtis G. M. The Action of the Specific Diuretics. *J. A. M. A.* **93**: 2016-2018 (Dec. 28) 1929.

28 Steglitz E. J. Histologic Hydrogen Ion Studies of the Kidney. *Arch. Int. Med.* **33**: 483-496 (April) 1924.

29 Blumgart H. L., Gilligan, Dorothy R., Levy R. C. and Brown M. G. The Effect of Diuretics on Water and Salt Metabolism. *Tr. A. Am. Phys.* **47**: 304-307 1932.

30 Melville K. I. and Stehle R. L. Mercury Diuresis. *J. Pharmacol. & Exper. Therap.* **34**: 209-222 (Oct.) 1928.

31 Bieter R. N. The Kidney in Health and Disease. University of Minnesota Symposium July, 1930 to be published.

32 Govaerts Paul. Origine rénale ou tissulaire de la diurese par un composé mercuriel organique. *Compt. rend. Soc. de biol.* **99**: 647-649 1928.

33 Christian H. A. and Bartram E. A. Experimental Observations on the Action of Diuretics. *Tr. A. Am. Phys.* **47**: 292-303 1932.

the glomerulus or tubule Schmitz³⁴ employing the creatinine clearance test, was able to show that merbaphen and aminophylline had quite different effects on the renal excretion of creatinine. Herrmann³⁵ obtained similar results. Because there is some question as to the exact significance of creatinine clearance by the kidney, we do not feel that the results of Schmitz and of Herrmann have yet established the facts that mercury exerts its diuretic action by diminishing reabsorption of water by the tubules, and that the effect of aminophylline depends on its increasing glomerular excretion. Experiments of Smith and his co-workers³⁶ with the renal excretion of certain sugars have suggested that these sugars pass through the glomerulus and are not reabsorbed by the tubules. It will be of interest to see how much new information these investigations can give in this subtle field of the renal action of diuretics.

Potassium salts have been known for many years to have a dehydrating effect on the animal organism. Wilks and Taylor³⁷ in 1863 administered potassium nitrate by mouth to a patient with nephritic edema, with success. The toxic effects of potassium salts, when administered by vein, deterred physicians for many years from using them in clinical medicine. Barker³⁸ has recently introduced the use of potassium chloride by mouth in cases of cardiac and renal edema. He has seen no toxic effects, and the diuretic effect, in some cases, has been very satisfactory. We have confirmed his results in a few cases. This action of potassium chloride suggested to us a trial of potassium nitrate in place of ammonium nitrate. The nitrate ion has definite diuretic properties, and potassium should have a greater dehydrating effect than the ammonium radical. We have used it in several cases of edema in the last few months and it has proved a valuable addition to the list of diuretic drugs. Further study as to its action on the blood and urine are now being carried out.

The ideal diuretic has yet to be discovered. In the last fifteen years, experimental work and clinical observation have added much to knowledge as to the action and therapeutic results of various types of diuretics. This should give much hope for their continued development in the future.

ABSTRACT OF DISCUSSION

DR M. HERBERT BARKER, Chicago. This therapeutic plan of diet and diuretic substances is effective in 75 per cent of the authors' cases. One must not be satisfied to treat the symptoms of edema. The edematous patient is always markedly wasted so that he must be built up generally and maintained. The plan given here lends itself well to the removal of fluid from the tissues and to the support and maintenance of the patient. One cannot emphasize the dietary care too much. The use of the specific diuretics requires consideration as to the type of patient. In my experience, patients of myocardial type tend to show a higher carbon dioxide combining power and indicate in the general check of acid base equilibrium that they are on the alkaline side. A diuretic plan composed of acidotic salts

and a diet with an acid ash has been extremely beneficial in my hands. The reverse, however, is true of the nephrotic group. They usually present high chlorides and relatively low carbon dioxide combining power and the acid-forming salts such as ammonium chloride and calcium chloride, frequently within a few days, while producing diuresis will carry them into a state of peculiar acidosis with depression and nitrogen retention. Ammonium nitrate, or even potassium chloride seems to be a much better salt in that particular case. I find that patients change very rapidly, depending on the plan in use, and that the plan that is effective one day may need definite changes within a few days. The optimum of hydration and dehydration is not easily measured, but in following the chlorides, the carbon dioxide and perhaps the serum proteins for concentration and dilution, one has a great adjunct in the care of these patients.

DR EDWARD J. STIEGLITZ, Chicago. Since Martin Fischer pointed it out, patients have been flooded with alkalis and sometimes their edema subsided and sometimes it got much worse. More recently, acid-forming salts ammonium chlorides and ammonium nitrate have been used with much better results. The fundamental reason probably lies in the tissues. But in part it may lie in the kidney structure. It was demonstrated some years ago that when the urine is acid in reaction, the cells of the tubules are alkaline in reaction, and when the urine is made alkaline, the cells are acidified. The cells of the convoluted tubules in the loops of Henle have exactly the opposite reaction to the urine. Alkali therapy in a nephritic as well as in a normal individual tends to make the reaction of the cells opposite to their normal reaction, theoretically it is justifiable to assume that they are probably less efficient when their hydrogen ion concentration is not their normal one. On the other hand acidifying the urine more strongly with the addition of acid salts tends to alkalinize the reaction in the cells of the convoluted tubules in the loops of Henle, in other words to approach more the normal reaction. An effort has been directed toward the elimination of edema as water. Water is probably the least important part of the edema. Edema fluid is toxic; it contains a great deal of toxic material. The modern conception should consider edema as a protective mechanism to remove from the circulation toxic and noxious substances. If that is the case the prime consideration is not the removal of water alone but the removal of the toxic material that is responsible for the accumulation of water. During these diuretic periods as the edema subsides the patient, in the majority of instances, becomes much more intoxicated, much more sick than he was during the period of the accumulation. This does not mean that one should encourage edema nor try to treat it at all. That would be a very unjustified and dogmatic statement. It means that during the subsidence of the edema it is perhaps safer to cover the diuresis with an adequate water intake and perhaps let the patient lose 1 liter of his edema fluid daily plus 1 liter of fresh water so that the intoxication is not made too great.

DR NORMAN M. KEITH, Rochester, Minn. The problem of edema is very complicated. The fact that it is possible to rid the body of this abnormal fluid in a good percentage of cases of course does not mean that the patients are being cured of their primary disease. The point brought out by Dr Barker that the diet is important is especially to be stressed. We had a man with marked anasarca due to renal disease who was finally rid of his edema by different diuretics. At this time we found him in a condition much like a convalescent case of typhoid. The metabolism was low. He needed protein and when we gave it in large amounts he stored it for days and gradually came up to his original weight. The point brought up by Dr Steglitz is also fundamental because we have noted that when the amount of chloride administered is above a certain amount acidosis develops and with the acidosis the patient may have severe renal insufficiency. The chlorides must be above a certain level in the plasma for diuresis to be effective, but if it is too high it may affect the renal cells in some way that is not understood. Finally there is the question of renal insufficiency. Dr Steglitz brought up the point that some of these patients when they are dehydrated become toxic. We had a case of liver insufficiency with cirrhosis with very little jaundice and yet when this treatment was given the patient

³⁴ Schmitz, H. L. Studies on the Action of Diuretics. I. The Effect of Fushilin and Salrgan upon Glomerular Filtration and Tubular Reabsorption. *J. Clin. Investigation* 11: 1075-1097 (Nov.) 1932.

³⁵ Herrmann, George, Stone, C. T., Schnab, E. H. and Bondurant, W. W. Diuresis in Patients with Congestive Heart Failure. *J. A. M. A.* 99: 1647-1652 (Nov. 12) 1932.

³⁶ Jolliffe, Norman, Shannon, J. A. and Smith, H. W. The Excretion of the Urine in the Dog. III. The Use of Non-metabolized Sugars in the Measurement of the Glomerular Filtrate. *Am. J. Physiol.* 100: 61-71 (April) 1932. Shannon, J. A., Jolliffe, Norman and Smith, H. W. The Excretion of Urine in the Dog. VI. The Filtration and Secretion of Exogenous Creatinine. *ibid.* 102: 534-540 (Dec.) 1932.

³⁷ Wilks, Samuel and Taylor, A. S. Case in Which a Large Quantity of Nitrate of Potash Was Taken Medicinally. Elimination of the Salt in the Urine. *Quart. Rev.* 9: 173-179, 1863.

³⁸ Barker, M. H. Edema as Influenced by a Low Ratio of Sodium to Chloride Intake. *Clinical Observation*. *J. A. M. A.* 98: 2193-2197 (Oct. 18) 1931.

developed a peculiar toxic mental state and the question at that time was whether the therapy had produced this condition or whether it was one of the incidents seen in that disease when left untreated. This patient recovered from the acute toxemia and later went through a similar course of diuretic treatment. During this period the accumulated fluid was passed and the patient is alive and well today. Two interesting facts brought out by this form of treatment are (1) the frequent development of a temporary acidosis and (2) temporary renal insufficiency. A very important practical question is to know how far to proceed with the treatment in each individual patient.

DIVIDED DOSES OF TYPHOID VACCINE IN THE FEVER THERAPY OF NEUROSYPHILIS

J. R. DRIVER, M.D.
AND
HENRY C. SHAW, M.D.
CLEVELAND

It is no longer necessary to defend the principle of fever therapy in the treatment of neurosyphilis, for Wagner-Jauregg's malaria treatment of dementia paralytica has had universal acceptance, and its value in other forms of resistant neurosyphilis has been firmly established. Soon after its introduction, however, it was recognized that inoculation with malaria was attended by certain dangers and limitations which precluded its general application for all cases. Generally speaking, only robust persons without serious physical sequelae should be inoculated. Also, it is found that approximately 10 per cent of the patients inoculated

labeled the trial of various foreign proteins in the fever treatment of neurosyphilis. Of these, typhoid vaccine has had by far the most extensive use. While it largely eliminates the objectionable features of malaria treatment and other disease-producing methods, the difficulty of producing high fever, comparable to those of malaria, consistently throughout a course of treatment, has been a serious drawback and has prevented a more general adoption of the method. In the past typhoid vaccine has been used largely for safety and convenience. Therapeutically, in the opinion of most investigators, it was inferior to malaria treatment.

The beneficial effects of fever therapy in neurosyphilis are roughly proportional to the height of the temperature obtained. Kirby³ thinks that temperatures above 105° F are necessary in order to obtain the maximum effect. Winslow, Miller and Noble⁴ believe that a high temperature, artificially produced, 104° F or higher, has a favorable influence on an established infection, while lower temperatures would seem to retard the formation of immune bodies. Thus, any procedure that would safely increase the fever-producing capacity of foreign proteins would probably also increase their therapeutic value. In order, throughout a course of treatment, to produce high temperatures by the intravenous injection of typhoid vaccine, it has been the usual custom to increase greatly the amount of each subsequent injection. Thus, doubling the previous dose is often resorted to, and amounts as high as from 2,000,000,000 to 4,000,000,000 organisms in a single injection have not uncommonly been reported. Even so, pyrexia comparable to that obtained by malaria has not been possible in all cases.

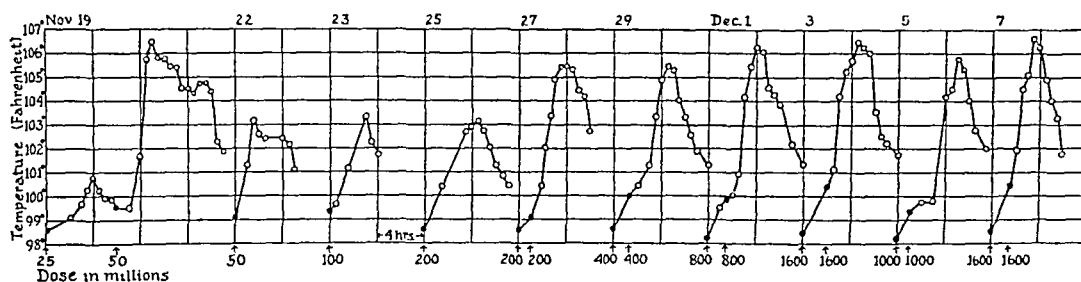


Chart 1.—Temperature reactions obtained in a patient treated by divided doses of typhoid vaccine given intravenously. The solid dots indicate the temperatures at the time each injection was made. Distinctly lower temperatures resulted from smaller doses in the second, third and fourth reactions.

have a partial or total immunity to malaria, making it necessary to adopt some other method of producing pyrexia. The difficulty of maintaining a suitable strain of tertian plasmodium, even in larger cities, is well recognized. For similar reasons, relapsing fever and sodoku have not fulfilled the requirements for a safe, efficient, easily available method of producing fever. Investigations, therefore, have continued in search of methods which would eliminate these objections.

The suggestion of Cowie and Calhoun,¹ of Barr, Du Bois and Cecil² and others, that the effect of malaria is due to the foreign protein nature of the paroxysm and not to a specific effect of the parasite itself, stimu-

In 1931, Nelson⁵ reported on "An Improved Method of Protein Fever Therapy in Neurosyphilis," using combined typhoid vaccine. The technic consisted in giving two daily intravenous injections of the vaccine in the following manner:

The first dose is given at any selected time and is of a size calculated to cause slight fever; the second is given during the height of the fever produced by the first—usually at the end of the second or third hour. The second dose seems to have the effect of "exploding" the charge supplied by the first and in this way relatively small doses are capable of producing fever apparently as high as desired—105°, 106°, 107° F.

Case records were submitted which clearly demonstrated the advantage of the double injection over the old single injection method.

Without knowledge of Nelson's report the following experience resulted in our investigation of the

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¹ Cowie D. M. and Calhoun Henrietta. Nonspecific Therapy in Arthritis and Infections. Arch. Int. Med. 23: 69 (Jan.) 1919.

² Barr D. P., Du Bois E. F. and Cecil R. L. Clinical Calorimetry: Temperature Regulation After Intravenous Injection of Proteose and Typhoid Vaccine. Arch. Int. Med. 29: 608 (May) 1922.

³ Kirby G. H. State Hosp. Quart. 11: 559-585 (Aug.) 1926.
⁴ Winslow C. A., Miller J. A. and Noble W. C. Proc. Soc. Exper. Biol. & Med. 13: 93 (1916).
⁵ Nelson M. O. Improved Method of Protein Fever Treatment in Neurosyphilis. Am. J. Syph. 15: 185-189 (April) 1931.

divided dose technic of using typhoid vaccine in fever treatment

CASE 1 (chart 1)—E M, a Negro, aged 31 had a meningo-vascular type of neurosyphilis, and on Nov 10, 1932, was inoculated with malaria. At the end of nine days no febrile reactions had occurred, and no malarial parasites were found on examination of blood smears. A dose of typhoid vaccine containing 25 000 000 organisms was given intravenously, followed by a rise in temperature to 100.8 F at the end of four hours. At six hours it had fallen to 99.5 F, at which time a second dose of 50 000 000 organisms was given. This produced an additional rise, with a fastigium of 106.5 F, three hours later. This unusual reaction was interpreted at the time as being a malarial paroxysm precipitated by the injection of the foreign protein. However, in the following three days no further rise in temperature took place, and examination of blood smears again failed to reveal any plasmodia. It was then decided to continue fever therapy by the use of typhoid vaccine, as had been our custom in the past in many similar instances of natural immunity to malaria. A dose of 50 000 000 organisms was given on November 22 with a peak temperature of 103.1 F. On the following day, a dose of 100 000 000 organisms resulted

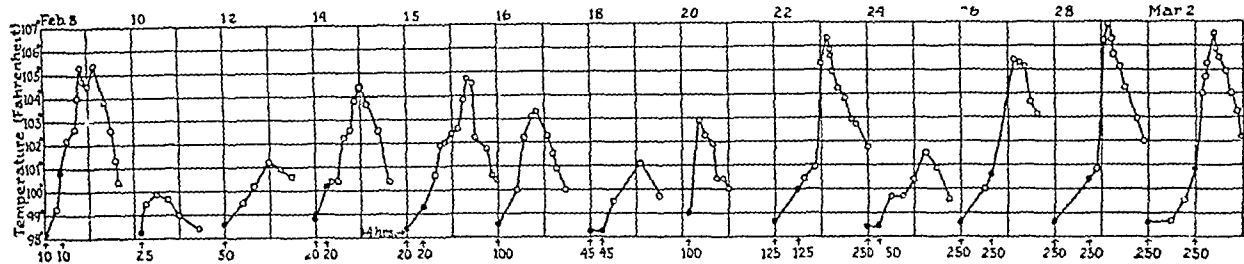
It is advisable to avoid the use of antipyretics for relief of headache or other symptoms during the course of the treatment, as they may greatly diminish the fever reactions.

The first dose is given at any convenient time, preferably in the morning. Within from thirty minutes to two hours the patient usually experiences a chill lasting for a few minutes and followed by a rise in temperature. The second dose is then given after the rise is well established, i. e. 100 F or higher. The interval between doses should be not less than two hours. It is found that an interval of from three to six hours is equally satisfactory, providing the temperature has not dropped to near normal by this time.

In many instances the fastigium lasts for only a few minutes so that unless the temperatures are taken frequently the peak cannot be recorded.

A course of treatment may consist of any number of reactions—as many as from ten to sixteen have been given. Subsequent courses may be given with equally satisfactory results after an interval of weeks or months.

It should be remembered that there is a great individualism in the tolerance of patients to the injection of foreign proteins, and although it is believed that this factor is less marked with



Definite myocardial disease, active tuberculosis and marked debility or cachexia are absolute contraindications to fever therapy.

At present no one can offer a satisfactory explanation of the interesting phenomena produced by the divided dose technic of giving typhoid vaccine. Ecker¹⁴ suggested that since the body has the property of promptly destroying or neutralizing some of the foreign protein after intravenous injection, this tendency may largely be satisfied by the first dose, permitting the second dose to cause an unusually intense reaction. Further studies along this line and on other phases of the subject in general have been planned.

SUMMARY

1 A series of nineteen patients with neurosyphilis and two with resistant syphilis associated with interstitial keratitis and iritis were treated with therapeutic fever, typhoid vaccine being administered intravenously, by the divided dose method, as described by Nelson.

2 Providing an initial rise in temperature has resulted from the first dose, the second dose produces an additional elevation with a fastigium usually comparable to that resulting from a malarial paroxysm.

3 The temperature of the patient should be taken before the second injection is made, and the vaccine should not be given unless a definite rise in temperature has occurred. The optimal interval between injections will vary between two and four hours.

4 The method is an excellent substitute for malaria treatment and brings satisfactory fever therapy within the reach of a still larger group of patients suffering from neurosyphilis.

5 Several courses of treatment can be given without the establishment of a permanent immunity, and chemotherapy can be combined with it if desired.

6 The higher temperatures made possible by this method clearly demonstrate the advantage to be gained over the older methods of producing fever by the injection of typhoid vaccine.

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ABSTRACT OF DISCUSSION

DR. PAUL A. O'LEARY, Rochester, Minn. This report augments the reports that have been made on the value of nonspecific therapy other than malaria therapy in the treatment of syphilis and adds weight to the fact that the best therapeutic results occur in the group in which the higher temperatures are produced. In the series of cases I treated by typhoid vaccine and reported several years ago the incidence of serologic reversal was considerably less than following malaria therapy. At that time I had not used the split dosage method as originally described by Nelson. The debate is still going on as to the mechanism by which malaria therapy produces its therapeutic results. The proponents of the electrical temperature elevating contrivances lean to the fact that the heat per se is the factor while others believe the reticulo-endothelial system or the individual's defense mechanism produces the satisfactory results. At the present time the evidence inclines toward the concept that heat produced within or heat returned

within the body, produces the successful therapeutic results. Nonspecific therapy is of value in the treatment of syphilis other than neurosyphilis. The authors mentioned the use of the split dosage method in the treatment of interstitial keratitis and I likewise have found it of definite value in the treatment of keratitis in syphilitic children. The photophobia disappears within one half the time that it does when specific measures are used alone. In my experience the results in the treatment of latent and Wassermann fast syphilis have been less encouraging to date. The great value that has been derived from these studies on nonspecific therapy is the fact that in selected cases satisfactory serologic and clinical results may be obtained when the arsphenamines, bismuth compounds and preparations of mercury have failed. Frequently the concurrent use of specific and nonspecific therapy augments, hastens and intensifies the results usually obtained by one or the other method when used alone.

DR. M. O. NELSON, Tulsa, Okla. I am glad that some one else has tried this method, because my efforts to interest others in it have been rather unsuccessful. In fact, it was only with the persistent encouragement of Dr. Stokes that its development was carried to something like completion of technical detail, in spite of meager opportunity. The authors speak of "divided doses", the term "double" or "coupled" doses seems a trifle more accurate. Certainly the effect produced is not merely a cumulative one. The two doses are timed and have a complementary and differing action, like the combination

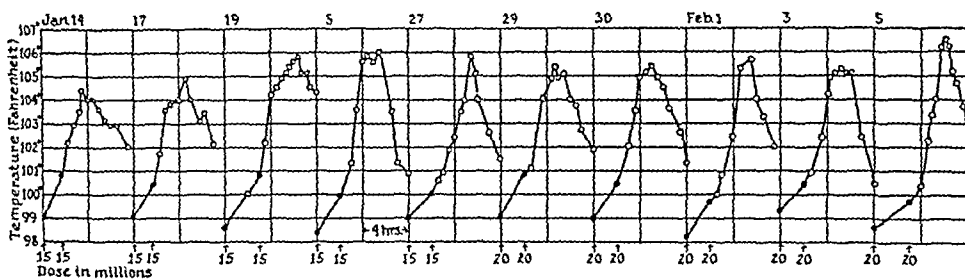


Chart 4.—Temperature reactions obtained in a patient given divided small doses of typhoid vaccine. Fever comparable to malaria resulted. A definite rise in temperature occurred before each second injection was made. Several satisfactory reactions were secured without the necessity of increasing the dosage.

of powder and a lighted match. The authors say that the second dose will not raise the temperature if the first dose has not caused fever. My own experience has been that it is the timing that is important, for I have often seen very high temperatures following the second dose, even when the first dose had not caused any elevation of temperature at all. A little experience with the method may be necessary to secure maximum effectiveness and it is important to follow technical details strictly. A partial list of these details appeared in the May, 1933 issue of the *Southern Medical Journal*. From the excellent results obtained I am convinced that this method of treatment is at least as effective as malaria and in one case it accomplished what malaria had failed to do. While in some of the larger institutions malaria treatment may be found more convenient, the ready availability of the double injection method makes it seem likely that it could be made to replace malaria almost entirely in general use. It has the advantage of being applicable early in the course of resistant syphilis before serious organic damage has occurred and at the very time when such a method is capable of doing the most good.

DR. LOUIS A. BRUNSTING, Rochester, Minn. It is generally conceded that the old technic of the use of typhoid vaccine by single injection even in enormous dosage produces reactions that are decidedly inferior to those of malaria. Following the original report by Nelson, I have used typhoid vaccine in broken doses as he specifies especially in those patients who are resistant to inoculation by malaria or in whom the course is interrupted spontaneously after a few fever bouts as is so often the case in the southern European patient. The method has the advantage over malaria as with radiotherapy or superdiathermy that the individual paroxysms can be regulated and modified as to time and to severity according to the condition of the patient. A certain amount of experience and conservatism is

14. See E. E. Perle's communication.

essential in the selection of proper cases and in the grading of dosage to provoke optimal reactions. Fevers of from 105 to 106 F are not uncommon, and on one occasion a rise to 108 F followed the administration of a double dose of 150 million organisms three hours apart. As a rule the febrile reactions by this method are more abrupt than with malaria but are of shorter duration, which can be demonstrated by using an electrical recording potentiometer with the rectal electrode in place for the duration of the paroxysm. There is a surprising individual variation among patients under fever therapy. As a rule it is well to avoid this method of therapy in those who present much involvement of the lower cord such as tabes with cord bladder or progressive ataxia, or those with acute syphilitic myelitis. Not infrequently such symptoms are aggravated by vigorous fever treatment. During the course of treatment, one of the most important laboratory aids in the recognition of toxemia is the level of the blood urea. Patients under malaria treatment sometimes show an alarming increase in the blood urea after four or five paroxysms, and in these the course is often stopped short of the desired number of fevers. It has been my experience recently that such a rise in the urea has been most marked when the loss of fluid by perspiration was greatest and especially in the summer months. I assumed that the elevation was merely a relative increase, due to concentration, and on this assumption proceeded to force fluids by mouth and by vein when necessary, to a total of 4 to 5 liters daily. The results have been quite satisfactory. In most instances the urea is reduced to its normal level, symptoms of dehydration disappear, and it is rarely necessary to stop treatment on this account short of the desired number of paroxysms.

DR J R DRIVER, Cleveland. It is important to emphasize that the split dose technic of using typhoid vaccine in fever therapy may present some danger if at the time the second dose is given, an unusually high temperature has resulted from the first injection. This can be illustrated by an example that came to my attention a few days ago. A patient suffering from chronic arthritis was given an initial dose of 25 million which at the end of two hours had produced a temperature of 103.5 F. This high fever was accompanied by convulsions and unconsciousness lasting for four hours. Following the use of carbon dioxide inhalations, injections of epinephrine, soluble barbitol and chloral hydrate cold packs and a saline infusion the temperature returned slowly to normal in ten hours. On the following day the patient felt perfectly well and his joint symptoms had disappeared. On the day this patient was treated the temperature of the room was approximately 95 F and unusually humid. The symptoms were those usually seen in a heat stroke. While it is entirely possible that this patient was extremely sensitive to intravenous protein, it may be that the second injection precipitated a heat stroke as a result of the unusually hot day. As a general principle, in using this therapy, the second injection should not be given if a temperature of 103 F or over resulted from the first dose.

Technic in Palpation.—The sensitiveness of hands and finger tips must be almost as variable as their character and shape. I believe we chiefly fail in palpation through lack of the art of "fine adjustment," to borrow a term from the microscope. It is scarcely ever necessary or useful to examine forcibly or roughly. Gross abnormalities we are only likely to miss if we are hasty or careless. But again it is the slighter abnormalities that are most valuable to us and our patients and these are only to be detected by the cultivation of a technic which is at once gentle and searching. The texture and qualities of the skin and the hair, whether we are looking for myxedema or testing the lost luster in the locks of an ailing child, are assayed by the fingers as well as the eyes. The slight edema of the skin over an empyema or other deep supuration is more worthy of discovery than the deep and obvious pitting of hydremic nephritis and only the trained and expectant thumb and forefinger can do it. The tiny anal fissure so often the cause of misleading and widely distributed pain and quite commonly missed can be appreciated as well by the forefinger as by the speculum, the feel of the lesion reminds one of the roughness of the button hole in the lapel of one's coat.—Ryle, J. A. *The Training and Use of the Senses in Clinical Work*, *Guv's Hosp Gaz* 47:421 (Oct 28) 1933.

GESTATIONAL POLYNEURITIS

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There have recently appeared several reports on gestational polyneuritis (neuronitis), emphasizing the clinical and pathologic aspects of this little known disease (Berkwitz and Lufkin,¹ Wilson and Garvey, McGoogan,³ Hoffman⁴ and Strauss and McDonald⁵). Having seen twelve certain or probable cases within the past seven years, we are persuaded that the condition is not so rare as is generally thought and that a wider knowledge of the essential clinical picture will increase the frequency with which the diagnosis is made and will proportionately diminish the number of patients reported as succumbing to "late toxic vomiting of pregnancy." It is our purpose to discuss particularly the clinical observations in the light of the recorded cases and of our own experience.

ETIOLOGY

It has been commonly assumed that the disturbance is the direct result of the action of a toxin which is elaborated by the product of conception and which has an especial affinity for certain parts of the nervous system. No evidence is available to support this hypothesis, which, moreover, is rendered improbable by the fact that termination of the pregnancy frequently fails to arrest the progress of the disease. More recently, Berkwitz and Lufkin,¹ McGoogan,³ Hoffman⁴ and Strauss and McDonald⁵ have called attention to the similarity of the nervous manifestations to those of beriberi and pellagra and have suggested that a deficiency of vitamin B (complex) may be responsible. The evidence supporting this position is not completely convincing, but the suggestion warrants serious consideration, since it offers a method of prophylactic and curative treatment not otherwise available.

PATHOLOGY

Visceral lesions are usually confined to mild degenerative changes in the various organs—kidney, heart, liver, suprarenals and the like. Grossly, the brain, spinal cord and peripheral nerves usually appear normal, although petechial hemorrhages may be detected, especially in the cerebrum and the meninges. Microscopically, the peripheral nerves show degenerative changes, while in the spinal cord, particularly in the anterior horn cells, there may be swelling of the cells with loss of the Nissl substance and occasionally a definite necrosis. Cerebral lesions are usually limited to petechiae. The involved muscles show marked degenerative changes.

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Berkwitz N J and Lufkin N H. Toxic Neuronitis of Pregnancy. *Surg Gynec & Obst* 54:743-757 (May) 1932.

2. Wilson K M and Garvey Paul. Polyneuritis Gravidarum, a Presumable Toxemia of Pregnancy. *Am J Obst & Gynec* 23:775-787 (June) 1932.

3. McGoogan L S. Toxic Neuronitis in Pregnancy. *Journal Lancet* 52:735-740 (Dec 15) 1932.

4. Hoffman L O. Presumable Toxemia. *Nebraska State M J* 17:422-424 (Oct) 1932.

5. Strauss M B and McDonald W J. Polyneuritis of Pregnancy, a Dietary Deficiency Disorder. *J A M A* 100:1320-1323 (April 29) 1933.

INCIDENCE

No estimate of the frequency of polyneuritis can be offered, although it is undoubtedly less rare than is commonly thought. Many cases of so-called late toxic vomiting of pregnancy should be placed in this category, as can be demonstrated by a careful survey of the reports in the literature. In other instances there may be a suspicion of "hysteria" because of the character of the subjective complaints and the almost complete absence of evidence of visceral disease. In any doubtful case, careful neurologic examination is demanded, since it is only in this way that polyneuritis can be diagnosed.

OCCURRENCE

The disease occurs more commonly in those pregnant for the first or second time, although women with a greater number of previous gestations are not exempt. There is no age relationship, the majority of cases occur between the ages of 20 and 35 years, when child-bearing is more common. Patients who have previously exhibited evidences of mental instability may be more susceptible.

ONSET

Gestational polyneuritis, of the type under consideration, almost invariably develops late in the course of, or following, an attack of hyperemesis gravidarum, making its appearance from twelve to twenty weeks after conception. It differs in this respect from those forms of isolated nerve involvement which may develop at any time during pregnancy or after delivery, without relation to nausea and vomiting.

SIGNS AND SYMPTOMS

There is a tendency to regard the early evidences of the neuritis merely as recurrences of a neurosis, since in many instances the patients who develop the condition have suffered earlier in their pregnancies from hyperemesis gravidarum, which has responded to simple treatment and which has therefore been viewed as "neurotic" in character. This is particularly true of the subjective complaints, such as the generalized weakness, the hyperesthesia and the tachycardia, which are so frequent in functional nervous disorders.

Chief Symptoms and Signs on Which the Diagnosis Depends—General weakness usually first appears in the lower extremities and may be limited to them. Ordinarily, the extensor muscles are more involved than the flexors, although the distribution is not uniform. The ankles and wrists may be less affected than the knees and elbows, or the paralysis may be more clearly of the ascending type. With the increasing weakness there is evident atrophy of the muscles which become soft and flabby.

Hyperesthesia in the affected parts is extremely variable. Occasionally the skin is hypersensitive but more commonly increased tenderness is elicited only by pressure deep into the muscles or over the nerve trunks. Placing the nerves on tension as by forcetful flexion at the ankles or raising the straight leg on the abdomen, produces exquisite pain.

Tachycardia is almost uniformly present and may be among the earliest changes to attract attention. The cardiac rate is not altered by physiologic doses of atropine, a fact that suggests actual involvement of the vagus. Electrocardiograms gave no evidence of abnormal cardiac action other than the increased heart rate.

Absence of the tendon reflexes in the affected extremities points to involvement of the lower neurons. As a rule, the knee jerks and achilles reflexes are lost first while the biceps and triceps jerks may be merely weakened or may disappear relatively late in the disease. Plantar stimulation and tibial pressure may evoke no response or one that cannot be easily interpreted.

Korsakoff's psychosis, with loss of recent memory, disorientation as to time and place and a tendency toward confabulation denotes cerebral involvement. It may appear late and, in mild cases, may disappear within a week or two. On the other hand, it usually persists for some months and may be permanent, particularly as regards the loss of recent memory.

Less Characteristic and More Variable Conditions—Ocular nystagmus, lateral and vertical, ocular squint more commonly divergent, and diplopia may result from involvement of the oculomotor muscles.

Optic neuritis may be indicated by indistinct, raised disk margins and slightly enlarged veins and may result in dimness of vision. On the other hand, ophthalmoscopic examinations may be negative and yet the dimness of vision may be attributable to an optic neuritis. Retinal hemorrhages of the "flame" variety have been rather commonly reported.

Exophthalmos has been recorded but is rare.

Central deafness is occasionally evident. There is good evidence that the actual auditory apparatus is adequate as shown by the prompt turning of the head in the direction of an unusual sound, but that the receptivity of the cerebrum is disturbed, so that response to questions is greatly delayed. In other instances there is evidence of nerve deafness, pointing to involvement of the auditory nerve. Auditory hallucinations have also been observed.

Delirium or drowsiness may develop in association with the psychosis, or quite independent of the mental alterations characteristic of the Korsakoff syndrome.

Choreiform movements of the head and face have been observed but are uncommon.

Dysphagia may result from paralysis of the muscles of deglutition, dysphonia, from involvement of the laryngeal and pharyngeal apparatus, while dyspnea may be due to paralysis of the diaphragm or the intercostals.

Pain in the involved extremities, independent of motion or pressure is rarely prominent but may occasionally demand attention.

Loss of positional sense is usually present as a manifestation of the ataxia of the extremities.

Involuntary urination and defecation have been noted rather frequently but appear more commonly late in the disease. In other instances there may be difficulty in urinating and catheterization may be necessary.

Jaundice has been described but is not common. Even in the patients who become icteric there is usually no marked necrosis of the hepatic cells.

Numbness is occasionally a prominent symptom even when there are no other evidences of sensory disturbance.

Paralysis of the diaphragm may be present as suggested by a costal type of respiration with the abdomen sinking with each inspiration or as shown by fluoroscopic examination. There may be an associated partial atelectasis of the lungs.

Laboratory Examinations—These do not generally give useful information although variations from normal may be noted at times. The urine is usually

normal but may show albumin and casts, especially when dehydration is pronounced. The blood commonly shows a moderate hypochromic anemia and occasionally a slight leukocytosis. Blood chemical studies ordinarily reveal no alteration from normal, but in rare instances there may be evidence of a moderate nitrogen retention. The carbon dioxide combining power is normal or slightly increased, and the hydrogen ion concentration tends to approach the upper limit of normal. The spinal fluid is under normal tension and shows no abnormal elements. There may be absence of free hydrochloric acid in the gastric contents. The blood and spinal fluid Wassermann reactions are commonly negative. Temperature elevations are uncommon except in the presence of an intercurrent infection or as a terminal event. Blood pressure readings are usually normal.

PROGNOSIS

In the forty-eight cases gathered from the literature by Berkwitz and Lufkin there were nine deaths—a mortality of 18 per cent. However, in the recent reports from this country the death rate was much greater, possibly because the condition was recognized more definitely in patients who succumbed early.

Percentage of Fatal Cases in Recent Literature

Author	Number of Cases	Deaths	Per Cent Fatal
Berkwitz and Lufkin ¹	4	9	75
Strauss and McDonald ²	3	0	0
McGoogan ³	5	4	80
Hoffman ⁴	1	1	100
Wilson and Garvey ⁵	2	2	100
Plass and Mengert	12	8	67
Total	28	19	68

When recovery does occur, it is usually slow but reasonably complete. Occasionally, however, the nerve changes are too extensive and the patient never regains the use of the involved extremities. In the four patients whom we have seen survive, a marked and rapid increase in weight was a prominent part of the convalescence. Patients who survive more than two weeks after the diagnosis can be made on physical examination have a relatively good chance of complete recovery. In fulminating cases, death may ensue within three or four days of the first symptom. Death is occasionally due to intercurrent disease but usually occurs because of complete paralysis of respiration or of swallowing.

TREATMENT

On the basis of the hypothesis that the disease results from a deficiency of vitamin B, intelligent prophylaxis would demand attention to securing an adequate consumption of this accessory food factor during and after hyperemesis gravidarum. With the recent tendency to force a high carbohydrate diet on patients with vomiting of pregnancy, there would seem to be an increased risk of producing vitamin deficiencies unless special care is paid to the inclusion of foods rich in these factors.

Curative treatment is generally ineffective unless one is impressed by the results of vitamin B feedings in the three patients of Strauss and McDonald. It would appear that their cases were mild in character, but the record of 100 per cent recoveries is impressive.

Emptying the uterus, as soon as a definite diagnosis is made, has not been so effective as to make it the

treatment of choice, although the association of the condition with pregnancy in an apparent cause-and-effect relationship presents a strong argument for therapeutic abortion. The fact that, in certain instances, the disease appears or becomes aggravated after the uterus has been emptied, or after the fetus has died, speaks against a toxic etiology and against too great reliance on termination of pregnancy as a therapeutic aid.

The possibility that the disease may appear in an aggravated form in a subsequent pregnancy constitutes sufficient reason for recommending contraception or sterilization for those patients who may recover.

The diet should be nutritious as well as vitamin containing. A plentiful intake of fluids should be assured, by mouth if vomiting is not frequent but by other routes if oral feedings are not well tolerated. Dehydration may be present and must be combated.

Heat and salicylates are most useful for the control of pain. The infra-red lamp, the heat cradle and the electric pad are helpful. Opiates should be used cautiously because of the chronic nature of the disorder.

Massage and electrotherapy are valuable adjuncts to the later treatment when reestablishment of function is particularly sought.

Orthopedic appliances are useful to combat the tendency of the involved extremities to develop contractures.

SUMMARY

Gestational polyneuritis commonly follows or develops concurrently with hyperemesis gravidarum. There is a tendency to explain the symptoms on the basis of hysteria unless a neurologic examination is made, since there are usually no evidences of visceral disease. The cardinal observations include (1) general weakness more marked in the legs and in the extensor muscles, (2) sensory disturbances, (3) tachycardia, for which no organic explanation can be elicited, (4) marked diminution or absence of the various tendon reflexes, and (5) a psychosis of the Korsakoff type.

The etiology is unknown, but the disease is variously explained as due to (1) a toxin developed by the conceptus or (2) a deficiency in vitamin B intake.

Pathologic changes in the viscera are scarcely significant, but degenerative changes in the peripheral nerves and spinal cord and petechial hemorrhages in the cerebrum offer an explanation for the neurologic manifestations.

The prognosis is poor. If the patient survives the first two weeks, slow recovery usually ensues, but it may never be complete.

Treatment is empirical and none too successful. Prophylaxis on the basis of high vitamin feeding offers the best hope for improving treatment. Therapeutic abortion is well advised but the results are frequently disappointing.

ABSTRACT OF DISCUSSION

DR. RALPH H. LUKART, Omaha. Cowgill of Yale demonstrated the lack of foundation for the hypothesis that polyneuritis is caused by a toxin. He has shown that, if the disturbance is not too advanced, relief can be procured by stabilizing the vitamin balance, particularly the vitamin B complex. This includes the antineuritic part of this vitamin, which formerly was called vitamin G. A patient with severe vomiting in pregnancy developed symptoms almost identical to beriberi, Korsakoff's syndrome and pellagra. Forced feeding of the vitamin B complex was instituted, and because of the results the case was reported at the obstetric meeting at Memphis last

October The paper by Straus and McDonald, referred to by the authors, emphasized the important fact that there is a decrease and often a lack of free hydrochloric acid in the gastric juice of pregnant women. In all these conditions there is a history of vomiting, diarrhea, loss of appetite, emaciation or some hepatic disturbance. It is well known that avitaminosis causes a loss of appetite which in turn prevents ingestion of vitamins, thus establishing a vicious circle. In these various disturbances evidenced by polyneuritis the etiology simmers itself down to a failure on the part of the individual to digest, assimilate or metabolize the needed vitamins to maintain a proper vitamin balance.

DR J H SURE, Milwaukee I want to call attention to a condition not quite so severe as polyneuritis, a form of toxemia that occurs in the latter months of pregnancy and is associated with pain and tingling in the extremities, which will not allow the patient to sleep. In former years it was my practice to use salicylates and barbiturates and even narcotics, but with no relief. Now, however, I have learned that these symptoms are caused by calcium deficiencies. It required at least 120 to 150 grains of calcium lactate daily to get relief from pain, and whenever the dose was cut down the pain recurred.

DR RAE T LAVAKE, Minneapolis I should like to ask the authors whether they have arrived at any definite conclusions as to how long one can subject these patients to non-operative treatment of any type and feel that they are safe. Four such cases have come under my observation and in each instance, from an examination of their charts, I would have terminated the pregnancy from indications of pulse and mental condition weeks before the neuritis developed. Gestational polyneuritis, to my mind, represents one of the possible terminal stages of early toxemia of pregnancy. If pregnancy is not terminated early, I feel that 60 per cent is possibly a low mortality rate.

DR F H FALLS, Chicago During the five years that I was at the University of Iowa I saw more of these cases than I have seen before or since. I also noted the rapidity in pulse and the similarity between the symptoms these patients manifest and those of a thyrotoxicosis. Since coming back to Chicago I have been interested in the question of hyperemesis gravidarum and thyrotoxicosis and have taken a large number of basal rates in patients suffering from hyperemesis gravidarum. The basal rate is nearly always high, not plus 10 or plus 20 but as high as plus 60 or 70, in two cases it was 111 and 109. A large percentage of them will recover from hyperemesis gravidarum, and the polyneuritis will improve if they are given compound solution of iodine. There is no question that a woman with hyperemesis gravidarum is suffering from an avitaminosis, but there are other things besides, and the polyneuritis may well be a combination of the toxemia with the thyrotoxicosis superimposed on an avitaminosis. I agree with Dr LaVake in that when I see severe or even beginning evidence of polyneuritis and a rising pulse up to 120 I consider seriously the emptying of the uterus. On the other hand I never have emptied the uterus unless I have proved to my own satisfaction that I cannot control conditions by the use of thirty drops of compound solution of iodine a day. With this treatment I have been able to carry along practically all patients without emptying the uterus except in those entering the clinic in a dying condition.

DR F J SCHATZ, St Cloud, Minn I wish to report a case that I saw in 1923 in a secundipara aged 28 in order to bring out a point not mentioned by Drs Plass and Mengert. The first pregnancy was normal. In her second pregnancy, at six months she developed weakness of the lower extremities, severe pain and gradual paralysis. There were no complications above the waistline. She went on to full term and delivered normally. A subsequent pregnancy two years later was normal with an easy delivery. She is still alive in good health but with complete paralysis of the lower extremities.

DR L D PLESS, Iowa City I am grateful to Dr Luikart for having emphasized the possibility of polyneuritis being an avitaminosis. Dr Sure intimated that the pain in polyneuritis could be controlled by calcium therapy. My experience in one case would indicate that calcium is not so effective as in other neuritic pains in the extremities. I am not sure when the

pregnancy should be ended. Most of my patients have come after mental symptoms were well developed, actually being admitted because of a psychosis. Certainly at that stage of the disease, emptying of the uterus is not an effective therapeutic procedure. In one case the uterus was emptied within a week after the tachycardia had appeared and the therapeutic abortion apparently had a good effect, in other cases it has not been so effective. There is such wide variation in the time of appearance of mental disturbances that the development of a psychosis is not an adequate indication for abortion. In the case presented, mental symptoms were first noted three weeks after the uterus was emptied. I would emphasize again that prophylaxis is infinitely better than the cure, and, on the avitaminosis hypothesis, it should be possible to provide protection by adequate vitamin feeding during and after the hyperemesis. In answer to Dr Falls, I may say that in one or two cases the basal metabolic rates were not excessively high, no higher than one would expect in a normal pregnancy. I am glad that Dr Schatz brought out the possibility that the paralysis may be permanent. I would also emphasize that some of the mental symptoms may be permanent. I have had one patient under observation for about eighteen months who still has loss of recent memory. She can recall distant events perfectly well but cannot remember what happened yesterday or last week. The possible permanence of some of the nervous manifestations must be kept in mind in any case of gestational polyneuritis.

THE BLADDER POST PARTUM

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AND

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For several years, we have followed a definite routine when caring for the urinary bladder post partum. This paper is concerned with an outline of this care, and a review of obstetric conditions that may influence the behavior of the bladder during the puerperium.

Our care of the urinary bladder post partum is based on the principles that overdistention of the bladder, and the presence of residual urine, favor infection of the urinary tract. We recognize a small group of women who are unable to void spontaneously post partum, apparently from no demonstrable cause. Nervous inhibition, posture and decreased intra-abdominal pressure may explain this. In caring for these patients, as well as all others, an attempt is made to cause spontaneous urination by such means as warm external "pitcher douches." However these are not persisted in to the point of exhausting the patient. We believe that too great value may be placed on spontaneous urination during the puerperium through fear that catheterization will cause infection of the urinary tract. It has been shown by Cabot¹ that infection rarely, if ever, is caused by aseptic drainage by catheter in itself but that previous overdistention and the persistent presence of residual urine are etiologic factors. The observations of Mengert and Lee² and others have demonstrated the presence of dilated, atonic ureters during pregnancy. This condition persists for a time post partum and would seem to make desirable avoidance of distention and residual urine.

In our experience it has been necessary to drain by catheter, the bladders of approximately 15 per cent of

From the Section on Obstetrics and Gynecology the Mayo Clinic.
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¹ Cabot, Hugh. Personal communication to the authors.
² Mengert, W. F., and Lee, H. J. Urinary Tract Changes During Late Pregnancy and Early Puerperium. *Am J Obst & Gynec* 21: 9.

puerperal women. Our patients are usually catheterized on the delivery table and so return to their rooms with the bladder empty. The average parturient woman is not dehydrated, but she is encouraged to take fluids as soon as any nausea that may have been incident to the anesthesia has disappeared. The majority of puerperal women have normal renal function, hence the secretion of urine should not be materially altered.

It would seem, therefore, that the decision whether the catheter is to be used should depend on the inability of the patient to void in the presence of a desire to do so or on evidence of a full bladder being gained by abdominal palpation. Not infrequently evidence of a full bladder will be elicited without the woman being conscious of a desire to void. However, if the patient does not void within eight to twelve hours post partum the catheter is used as a rule. Subsequently she is given an opportunity to void spontaneously, but if she is unable to do so the catheter is inserted at intervals of eight hours. Following the first spontaneous urination she is again catheterized to learn if any residual urine is present. The average patient with retention is able to empty the bladder completely and spontaneously by the third day post partum.

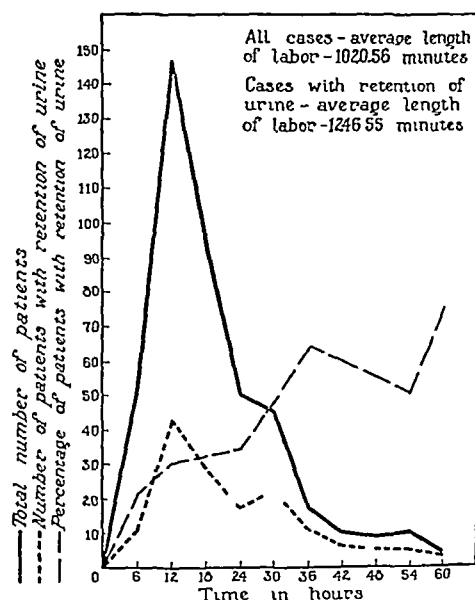
Those patients who begin to void spontaneously, but frequently and in small amount, are catheterized after one of their voidings, and not infrequently residual urine is found. These women are then catheterized after each urination until the quantity of residual urine is less than 50 cc. A few cubic centimeters of solution of silver nitrate, 1 per cent, is instilled through the catheter after each drainage for the antiseptic and stimulatory effect.

The regimen outlined in the preceding paragraphs has been in force for eight years, with no untoward results.

Nine hundred and eighty-four patients were studied post partum to determine, if possible, the cause of retention of urine in the puerperium. The selection was made solely on the basis of ability or inability of the patient to empty the bladder spontaneously. Patients who were able to void spontaneously numbered 776, those who had retention necessitating catheterization numbered 208. Of the patients who could urinate spontaneously, 63 per cent were multiparas and 37 per cent primiparas, of those who were catheterized 26 per cent were multiparas and 74 per cent primiparas.

The pelvic measurements were recorded to determine the incidence of deviation from normal in the two groups. Of the 776 women who were able to void spontaneously post partum, 90.52 per cent had normal measurements. The remaining 9.48 per cent had pelvic contraction, classified as follows: unspecified contraction, 1.1 per cent, flat pelvis, 1.0 per cent, generally contracted pelvis, 2.5 per cent, funnel pelvis 0.28 per cent and contraction of the pelvic outlet, 4.6 per cent. Of the 208 women who had retention of urine post partum, 79.49 per cent had normal pelvic measurements. The remaining 21.51 per cent had pelvic contraction classified as follows: unspecified contraction 3 per cent, flat pelvis, 2.7 per cent, generally contracted pelvis 1.2 per cent, funnel pelvis 0.61 per cent and contraction of the outlet, 1.4 per cent. There is no significant difference in the proportion of the various pelvic abnormalities except in contraction of the outlet. This condition is naturally associated with a considerable proportion of cases in which there is trauma to the soft tissues of the perineum and in which episiotomy and low forceps deliveries are necessary.

The frequency of certain factors that might be associated with increased trauma to the maternal soft tissues was studied. The 776 cases in which urination was spontaneous post partum were studied first. In forty cases (5.2 per cent) manual rotation from the occipitoposterior position to the occipito-anterior position was carried out, in seven cases (0.9 per cent) the same change in position was effected by means of forceps. There were seventy-one cases (9.2 per cent) in which the occiput rotated spontaneously from posterior to anterior. In ten cases (1.3 per cent) the cervix was dilated manually, and in four cases (0.5 per cent) the cervix was incised because it failed to dilate. Sixty patients (7.7 per cent) had dry labors. Episiotomy was performed in 326 cases (42 per cent). Next, the 208 cases in which catheterization was necessary were studied. In seventeen cases (8.1 per cent) manual rotation from the occipitoposterior to the occipito-anterior position was effected. There were four cases (1.9 per cent) in which the same change in position was brought



The percentage of patients who are unable to empty the bladder spontaneously increases progressively with the length of labor.

about by means of forceps, and eleven cases (5.2 per cent) in which it took place spontaneously. Manual dilatation was performed in six cases (2.9 per cent) and incision of the cervix in two cases (0.96 per cent). Dry labor occurred in nineteen cases (9.1 per cent). Episiotomy, with repair, was performed in 150 cases (75 per cent).

It would seem that occipitoposterior presentation, whether rotation is spontaneous or whether manipulation is necessary to correct it, has little to do with subsequent retention of urine except as it affects the length of labor. Likewise, conditions that may be associated with increased trauma to the cervix, such as manual dilation of the cervix, Dührssen's incision of the cervix, and loss of the bag of waters before dilatation begins, seem to have no bearing on the subsequent ability of the patient to void. Trauma of the pelvic floor and vulva, associated with episiotomy, apparently increases the chances of retention of urine post partum.

The numbers of various operative deliveries through the vagina were as follows. Among the cases in which urination was spontaneous low forceps was used in 144 cases (19 per cent), midforceps in thirty-one cases

(4 per cent), and high forceps in two cases (0.25 per cent), in four cases (0.5 per cent) the after-coming head required operative delivery, and version and extraction were performed also in four cases (0.5 per cent). The total incidence of operative delivery was 24 per cent. Among the cases in which catheterization was necessary, low forceps was employed in seventy-seven cases (37 per cent), midforceps in eighteen cases (8.6 per cent), and high forceps in one case (0.48 per cent). There were fourteen cases (6.7 per cent) in which it was necessary to use forceps on the after-coming head, and two cases (0.96 per cent) in which version and extraction were performed. The total incidence of operative delivery was 53.74 per cent. Of the patients who required catheterization, 74 per cent were primiparas, hence the higher incidence of operative delivery. Naturally, among primiparas who underwent operative delivery, the labors were longer and the proportion of cases in which episiotomy was performed was high (92 per cent). The factors of fatigue and of reaction to analgesia and anesthesia perhaps played a part in urinary retention in this group of cases.

Position and presentation of the infant were virtually of the same distribution in the two groups, except that among the cases in which urination was spontaneous the incidence of breech presentation was 2.2 per cent and among the cases in which catheterization was necessary, 8.1 per cent. It may be that the more rapid passage of the after-coming head through the birth canal is a factor in causing retention, but the incidence of episiotomy in breech deliveries is high and this factor may be the more prominent contributory cause.

Labor had been induced for various reasons in 30 per cent of the cases in which catheterization was necessary and in 19 per cent of the cases in which urination was spontaneous. The methods of induction of labor bore no relation to the subsequent behavior of the bladder.

SUMMARY AND CONCLUSIONS

The percentage of patients who cannot urinate spontaneously increases as the length of labor increases. This suggests that fatigue is a factor. In addition those patients who go through prolonged labor, as a rule have had more analgesia during labor and more anesthesia during delivery than those whose labor is of shorter duration; these factors may affect the ability to void.

As compared with the patients who could urinate spontaneously post partum the incidence of pelvic contraction was found to be twice as great among patients with retention post partum. Contraction of the pelvic outlet was the most common form of pelvic contraction; naturally the percentage of episiotomy and forceps delivery was high in this group of cases.

Factors thought to be associated with increased trauma to the vaginal wall and cervix such as spontaneous rotation in cases of occipitoposterior position, operative correction of errors of rotation, manual dilatation of the cervix, incision of the cervix, and premature rupture of the bag of waters did not materially influence the frequency of retention of urine. Injury to the bladder or urethra did not occur in any case.

Operative delivery through the vagina had been performed in 53 per cent of the cases in which catheterization was necessary and in 25 per cent of the cases in which voiding was spontaneous. Of the women who underwent operative vaginal delivery 76 per cent were primiparas; 70 per cent of the operations were deliveries by low forceps.

Episiotomy with repair had been performed in 72 per cent of the cases in which catheterization was necessary and in 42 per cent of the cases in which voiding was spontaneous. Ninety-two per cent of the primiparas and 76 per cent of the multiparas who underwent operative delivery also had episiotomy. Eighty-four per cent of the operations were accompanied by episiotomy.

It would appear, therefore, that primiparity associated with episiotomy and repair is most frequently followed by urinary retention. Prolonged labor, delivery by forceps and contraction of the pelvic outlet exist as contributory causes. While this regimen of care of the bladder post partum has been carried out 3,500 women have been confined with no untoward effect on the urinary tract. We believe, therefore, that avoidance of overdistention and residual urine must in part account for the freedom from infection of the urinary tract among patients who are catheterized post partum. Further, it would seem that the act of catheterization properly performed, before overdistention occurs and residual urine appears, is a safe procedure.

DILATATION OF THE KIDNEY PELVIS AND URETER DURING PREGNANCY AND THE PUERPERIUM

A PYELOGRAPHIC STUDY IN NORMAL WOMEN

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AND

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In 1925 we¹ reported our observations on dilatation of the ureter and kidney pelvis during pregnancy in a group of cases studied by retrograde pyelography. The cases were divided into three groups.

In group 1 were eleven cases of acute pyelitis during pregnancy. In every case either bilateral or unilateral dilatation was found of from marked to enormous degree.

Group 2 consisted of nineteen cases of normal pregnancy with normal urine. In sixteen of these cases, or 84.16 per cent, either unilateral or bilateral dilatation was found.

In group 3 were six patients who gave a history of a pyelitis either before marriage or during a previous pregnancy but who were normal at the time of the investigation. Bilateral dilatation was found in two cases, unilateral in three cases and no dilatation in one case. The conclusion was reached that varying degrees of dilatation occur in approximately 80 per cent of cases of normal pregnancy.

Seng² studied a series of seventy-eight normal pregnant women by retrograde pyelography and found that 100 per cent showed dilatation of the right ureter and 94.5 per cent showed right hydronephrosis while the left ureter showed dilatation in 66 per cent of primiparas and 77 per cent of multiparas and left hydronephrosis in 46 per cent of primiparas and 66 per cent of multiparas.

From the Freshwater Hospital and the A. D. Thomsen Urological Fund of Rush Medical College of the University of Chicago.

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¹ Kretschmer, H. L., and Heaney, N. S., Dilatation of the Ureter and Kidney Pelvis During Pregnancy. *J. A. M. A.* 87: 496 (4), Aug. 14, 1925.

² Seng, M. J. *J. Urol.* 21: 45 (April) 1929.

Schumacher³ studied 100 pregnancies by intravenous pyelography. He found that dilatation of the lumbar ureter occurred in 100 per cent of cases after the fifth month and increased with the duration of pregnancy, and that bilateral dilatation of the lumbar ureter occurred in 83 per cent of cases. He found dilatation of the pelvic ureter in only two cases. He found twist-



Fig 1—Moderate dilatation of the right kidney pelvis and slight clubbing of the calices in Mrs S at fourth month of pregnancy

ing of the upper third of the ureter in 80 per cent of the cases and attributed the conditions to obstruction.

Cornell and Warfield⁴ in a similar study found dilatation of the right ureter in every case examined, beginning as early as the fifth month.

In order to verify our previous observations and conclusions, we undertook to study another series of cases by intravenous pyelography, expecting that we might find in this series fewer dilatations, since we suspected that possibly overdistention of the ureter and kidney pelvis by the retrograde method might have increased the percentage of dilatations in our first study.

For this investigation we selected only such women as gave normal previous kidney and bladder histories and who were normal as to urinary examinations and obstetric conditions at the time the study of each case was begun. We not only wished to determine how commonly dilatation of the kidney pelvis and ureter occurs during pregnancy but were curious regarding several other questions, namely, How early on the average does the dilatation begin and does it always increase as pregnancy lengthens? Does the dilatation, when present, start to disappear immediately after delivery, and how long after delivery does it require for

the normal conditions to return? With these questions in mind, we decided to assume the study of only such cases as we could probably follow throughout pregnancy and the puerperium, expecting to make examinations first between the second and fifth months, then during the seventh or eighth month or just before delivery, then between the eighth and fourteenth days post partum, again six weeks after delivery, and finally about three or four months post partum, should the last previous examination not already be normal.

Neoskiodan was the drug selected for this study. Twenty cubic centimeters was injected into the cubital vein and the first films were made ten minutes after the injection, and the second films taken from twenty to forty minutes after the first films were made. Only one patient showed any idiosyncrasy for the drug. She vomited each time after the injection but had no febrile reaction.

In all, the study of fifty-nine cases was begun. Five of these were discarded after the first intravenous pyelogram was made because the urine examined bacteriologically was found to show a few colon bacilli and the sediment to show a few leukocytes, leaving a series of fifty-four normal cases for further study on whom intravenous pyelograms were made between the second and fifth months. Ten of these patients failed to return, so that forty-four patients were studied.



Fig 2—Massive right hydronephrosis and dilatation of the right ureter and moderate dilatation of the left kidney pelvis and kinking of the left ureter with fetal long bones overlying the right kidney pelvis, in Mrs S at term

between the sixth and eighth months. Some of these patients have not yet been delivered while others have been delivered so recently that their complete study has not been finished. There are, however, thirty-one cases

³ Schumacher Paul Arch f Gynak 143 28 35 1930

⁴ Cornell E L and Warfield C H Am. J. Obst. & Gynec. 23 461 471 (April) 1933

⁵ Through the courtesy of the Winthrop Chemical Company the manufacturers of this product the Neoskiodan was furnished us free for this investigation

that have been followed from early pregnancy through the delivery and puerperium until the kidney and ureteral conditions were normal

ANALYSIS

The youngest woman was 17 years of age and the oldest was 37. In this group there were thirty-five primiparas and nineteen multiparas



Fig. 3—Decrease in the size of the right hydronephrosis with some increase in the dilatation of the left kidney pelvis and blunting of the calices and dilatation and tortuosity of both ureters in Mrs. S. two days post partum

First Period—This part of the study lay between the second and fifth months. Fifty-four cases were studied and there was evidence of dilatation in 67 per cent

TABLE 1—Analysis of the Distribution of the Dilatation in First Period

Calices on right side	57.0 per cent
Calices on left side	15.0 per cent
Pelvis on right side	54.0 per cent
Pelvis on left side	15.5 per cent
Lumbar ureter on right side	2.0 per cent
Lumbar ureter on left side	55.0 per cent
Pelvic ureter on right side	17 per cent
Pelvic ureter on left side	34 per cent

The dilatation was distributed as follows: right and left sides, 37.0 per cent; right side only, 28.3 per cent; left side only, 17 per cent

The earliest case was examined at two months and showed dilatation of the right pelvis and calices with kinking of the right ureter and the left side was normal. An analysis of the distribution of the dilatation is given in table 1.

Second Period—This period of study lay between the sixth and ninth months. Forty-four cases were studied during this period and 93 per cent showed dilatation, an increase of 26 per cent over the first period. The dilatation was distributed as follows:

right and left side, 54.7 per cent; right side only, 38.3 per cent; left side only, none. An analysis of the distribution of the dilatation is shown in table 2.

Third Period—This period of study was in the early puerperium, that is, during the first two weeks after delivery. In this group there were thirty-two cases. In 59.375 per cent the pyelograms showed a return to normal after two weeks. In 34.375 per cent the pyelograms were normal after six weeks and the remaining 6.250 per cent were normal after twelve weeks.

TABLE 2—Analysis of the Distribution of the Dilatation in the Second Period

Calices on right side	92.00 per cent
Calices on left side	30.70 per cent
Pelvis on right side	86.15 per cent
Pelvis on left side	30.70 per cent
Lumbar ureter on right side	74.60 per cent
Lumbar ureter on left side	59.00 per cent
Pelvic ureters	Not visible

Fourth Period—The fourth period of study included those cases that were not normal at the end of the two weeks and were studied between the sixth and tenth weeks post partum.



Fig. 4—Further decrease in the size of the right hydronephrosis with normal pyelogram and ureterogram on the left in Mrs. S. six weeks post partum

Although 93 per cent showed some dilatation during the sixth to the ninth month of pregnancy, 46 per cent of these forty-four women who previously showed dilatation between the second and fifth month were found to be normal during the sixth to the ninth month, so that some time during pregnancy dilatation was found in 97.6 per cent.

Only one patient (2.4 per cent) in this series failed to show dilatation at some period during pregnancy and she was a primipara who had twins. However, she did show a mild dilatation of the calices and lumbar ureter on the left side ten days after delivery. Twenty-one days after delivery the calices had returned to normal and the dilatation of the ureter had decreased 50 per cent, at the end of seven weeks she was normal.

In this series of cases, therefore, 100 per cent showed evidence of dilatation at some time during pregnancy or after delivery.

DEGREES OF DILATATION

For purposes of comparison, we graded the degrees of dilatation from 1 to 6. On the average the dilatation found between the second and fifth months increased in size between the sixth and ninth months.

As previously stated, 4.6 per cent of the dilatations found between the second and fifth months showed no dilatation between the sixth and ninth months. Between the second and fifth months 4.6 per cent of the dilatations remained stationary as the pregnancy advanced, 90.8 per cent of cases showed a progressive increase in the dilatation, some of them up to six times the amount of dilatation seen early in pregnancy. Some trouble was met in the interpretation of a few films because of obscurity caused by the fetal parts overlying the urinary system.

LATERAL DISPLACEMENT OF LUMBAR URETER

As this study progressed, we were impressed by the frequency with which lateral displacement of the lumbar ureter was found. From the second to the fifth month the following displacements were noted: bilateral displacement 12.95 per cent, displacement of the right ureter only 7.40 per cent and displacement of the left ureter only 5.55 per cent, making a total of 25.90 per cent.

As the pregnancy advanced the number of cases showing displacement increased, so that from the sixth to the ninth month the following incidence was noted: bilateral displacement 24.97 per cent, displacement of the right ureter only 22.60 per cent and displacement of the left ureter only 13.56 per cent, making a total of 61.13 per cent.

Mesial displacement of the right ureter was found in three cases between the second and fifth months and in two cases on the left side, while between the sixth and ninth months only one mesial displacement of the ureter was found and that was on the right side.

The ureters that were mesially displaced between the second and fifth months became laterally displaced between the sixth and ninth months, except in one case in which the right ureter remained mesially displaced.

Outward displacement of the ureter increased as pregnancy advanced, except in one case in which it was less.

PELVIC URETER

The pelvic ureter was visible between the second and fifth months in 23.2 per cent on the right side and in 37.2 per cent on the left side. Only one case showed dilatation, and this was on the left side.

Between the sixth and ninth months the visibility of the right ureter was 9.3 per cent and the left 20.9 per cent. There was no evidence of dilatation. In the case that showed dilatation between the second and fifth months, the dilatation was not visible between the sixth and ninth months.

After delivery the pelvic ureter was visible on the right side in 61.5 per cent and on the left side in 51

per cent. Only one case showed dilatation and that on the right side, along with dilatation of the lumbar ureter.

GENITO-URINARY ANOMALIES

In this group of fifty-nine cases in which pyelograms were made, the following malformations were found: bifid pelvis, two cases, double kidney and complete double ureter (left), two cases, and bilateral double pelvis, double kidney (left), one case. In one of the cases of complete double kidney and ureter the upper half remained normal while the lower half showed marked dilatation of the pelvis and ureter.

SUMMARY

1 Dilatation of ureters and kidney pelves occurred in 100 per cent of our cases during pregnancy or the puerperium.

2 The striking feature about the dilatation of the ureter during pregnancy is that the dilatation is almost universally above the brim of the pelvis.

3 As a rule, the dilatation is progressive along with pregnancy. There was one exception to this statement in which case the ureter was normal in advanced pregnancy when earlier it was dilated.

4 Lateral displacement of the ureter, when found early in pregnancy, tends to increase as the pregnancy advances.

5 In none of these cases did pyelitis develop during pregnancy, although marked dilatation and lateral displacement were present.

6 Presentation and position of the fetus could not be brought into causative relationship with dilatation or displacement.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs RANDALL AND MURRAY AND DRs KRETSCHMER, HEANEY AND OCKULY

Dr F. H. GILLS, Chicago. I have been interested in this subject since I did some work on pyelitis in 1922, particularly the question of dilatation of the ureters in pyelitis and the subsequent contraction that occurs. I wish to raise the question as to why the ureters dilate and why they recover so rapidly in most instances after delivery. It has occurred to me that it is possible that the dilatation may be due to some substance in the blood which inhibits the smooth muscle contraction. There is something in the blood of the pregnant woman that prevents the uterus normally from emptying itself until the fetus is at term. When the time comes, the uterus starts to deliver itself. During the distention of the uterus and while its ability to contract is inhibited there is distention also of the ureters, and when the uterus empties itself the ureters also contract. Both the uterus and the ureters are made of smooth muscle, are developed embryologically from similar tissue, and are controlled by a similar nervous mechanism. In regard to the observation of deviation of the ureter which Drs Kretschmer, Heaney and Ockuly brought out I wish to ask whether the position and rotation of the uterus were noted. Any one who has done cesarean sections has noted marked deviation and rotation of the uterus. When examining the uterus early in pregnancy one often finds that the two sides of the uterus do not enlarge at the same rate. Frequently the uterus is not pear shaped but is larger on one side than on the other. Embryologically the uterus is a bicornate organ and early in pregnancy the side containing the pregnancy enlarges first. The asymmetrical development may account for the deviation of the ureter early and the rotation of the uterus increases the deviation as pregnancy advances. In connection with work on pyelitis I examined a number of normal women post partum to see how many had residual urine containing bacteria. Practically 80 per cent had residual urine and most of them had staphylococci and *B. coli* in the urine. So it seems that the danger of introducing other organisms by careful use of the catheter may be overemphasized. I agree with

Drs Randall and Murray that women suffering from retention of urine should be relieved. Those who do many perineorrhaphies frequently notice the retention following perineorrhaphy. I frequently note this complication, although there is no injury or irritation to the floor of the bladder. I feel that retention in these cases is due to a reflex inhibition of the sphincter.

DR VINCENT J O'CONNOR, Chicago. As has been illustrated this morning excretory urography enables one to demonstrate dilatation of the ureters and renal pelvis during pregnancy in a large majority of instances. These studies afford further and added proof of the accuracy of the work of Hofbauer and others that pregnancy is accompanied by the frequent occurrence of ureteral dilatation and, consequent on it, a degree of ureteral atony and a delay in ureteral action. Hofbauer has shown that during pregnancy the lower end of the ureter and the trigon undergo hypertrophic changes in the musculature, associated with hyperplastic changes in the connective tissue with resultant narrowing of the lower part of the pelvic portion of the ureter. These changes are frequent enough to be designated as "physiologic" and can in no way be satisfactorily explained by the time honored theory of ureteral pressure from the enlarged uterus or the pressure of the fetal head. Histologic evidence suggests an analogy between these processes in the ureter and the trigon, with the involution phenomenon occurring in the uterus during the puerperium. In the presence of urinary infection during pregnancy, this ureteral stasis and added narrowing may favor the development of permanent sclerotic changes in the ureteral wall with a continuation of inadequate drainage and recurrent infection. Clinically, one sees rather frequently women who have never had a urinary infection before pregnancy but who continue to have renal infection and backache unless relieved by ureteral dilation. On the other hand, one sees in even greater number the women with pyelitis during pregnancy whose ureteral activity is normally restored shortly after the puerperium. As clinicians, it seems idle for us to argue back and forth as we have done in the past, as to whether these individuals had pre-existing ureteral obstruction as the cause of their faulty drainage and infection or whether they had pyelitis in infancy and so forth. The important point is to regard any woman who has urinary infection during pregnancy as demanding follow-up observation of the ureteral dynamics, after the puerperium has terminated. In this way those patients with persistent obstruction may be treated before marked upper urinary tract damage has occurred and those in whom normal function has been restored may be dismissed with the knowledge that the normal cycle has been completed. Whether excess of bile salts in the blood or insufficient pituitary or suprarenal secretion comprises the underlying 'physiologic' reasons for these changes during pregnancy remains to be proved. The discussion of Drs Randall and Murray on the care of the postpartum bladder is excellent proof of the dicta of Dr Hugh Cabot in his oft repeated pleas for the prompt and sane use of the urethral catheter. If this teaching should be followed there would be a decreased necessity for later urologic care in these patients.

DR WILLIAM E STEVENS, San Francisco. Various investigators estimate that dilatation of the kidney pelvis and ureters occurs in from 80 to 100 per cent of all pregnant women. The latter figure is more nearly correct. Schumacher, Mengert and Lee and Hodges studying in all 148 cases by means of excretory or retrograde urography found as did Kretschmer and his co-workers that dilatation occurs in every case. Dilatation like pyelitis during pregnancy is more common and more pronounced on the right side. A diagnosis of pyelitis of pregnancy was made in 106 or 13 per cent of 8118 cases of pregnancy seen in the department of gynecology and obstetrics at Stanford University School of Medicine. In a study of 225 cases of pyelitis of pregnancy treated in the Stanford service or reported in the literature I found that the right kidney was involved in 1-2 cases, the left in twenty six and both kidneys in forty six. About 18 per cent of our pyelitis cases that were associated with pregnancy occurred post partum. Dilatation of the upper urinary tract was seen in all of a small series of the cases in which pyelograms were taken. Opinions vary widely as to the etiologic factors in dilatation

of the kidney pelvis and ureters during pregnancy. Some believe that the latter is due to pressure of the enlarged uterus on the ureter, others because of obstruction of the ureters due to stretching, torsion and traction. Hofbauer states that the dilatation is due to the obstruction caused by the fibrosis and muscular hypertrophy that occur in the lower ends of the ureters during pregnancy. Ureteral and urethral strictures plus the congestion of the pelvic organs associated with pregnancy may be responsible for dilatation, stasis and subsequent pyelitis especially in the presence of an antepartum low grade infection. It is well recognized that very little pressure is necessary to obliterate the lumen of the ureter. The frequency with which dilatation of the ureter extends upward from the pelvic brim in cases of pregnancy lends weight to the conclusion that distention is often due to pressure of the uterus on the ureter at the brim of the pelvis. The position of the fetus and pressure by the uterus are etiologic factors in the dilatation of the ureters and pelvis during pregnancy. Most urologists will agree with Drs Randall and Murray that postpartum infection of the urinary tract is more common in the presence of residual urine plus overdistention. Other factors also have an influence in producing infection of the postpartum bladder. Following catheterization, two days after delivery, I found residual urine in twenty-nine, or 81 per cent, of thirty-six cases. Evidence of infection was absent in the majority. Residual urine alone without overdistention or other contributory factors probably has very little influence in producing infection.

DR G C PRATHER, Boston. At the Boston Lying-In Hospital, where we have about 2,000 deliveries a year, investigation shows that we have about 3 per cent who fail to void normally post partum. In 1929 I reported a system of intermittent drainage or constant drainage, or a combination of the two in the treatment of these atonic bladders, being especially careful to avoid overdistention of a bladder residual in those having urinary tract infections. I believe that such factors are responsible for certain cases of postpartum pyelitis. Since that time our figures show that in 192 cases of bladder complications post partum, during 1930-1932, there were only six in which pyelitis developed. This incidence of pyelitis is better than the series I reported in 1929 in which there were eight cases of postpartum pyelitis in fifty-eight cases of postpartum bladder complication. The methods of treatment now are essentially the same as those recommended in 1929, so the only conclusion to be drawn is that the house staff is more alert in recognizing these bladder complications and in giving them prompt treatment.

DR N S HEANEY, Chicago. There are some points that I wish to emphasize. The first is the preponderance of right-sided dilatation. During the fourth and fifth month the right side is dilated in 28 per cent and the left side in only 6 per cent of these cases. From the sixth to the ninth month the right side is dilated in 38 per cent and the left side in a low percentage. The work that has been done has left much to be explained. Why does the right side show this marked dilatation? Certainly it is not due to hypertrophy. Hyperplasia and hypertrophy (Hofbauer's theory) occurs at the vesico-ureteral junction and it decreases as one ascends the ureter. We found the pelvic ureter dilated in only one case while the lumbar ureter was dilated in many cases. If the hypertrophy is a factor the dilatation should begin at the vesico-ureteral junction and since hyperplasia and hypertrophy are the same in the two ureters the dilatation should be the same on the two sides but it is found thirty-eight times on the right to one on the left. The frequency of right-sided pyelitis over left-sided pyelitis agrees with the increased frequency on the right side of dilatation and dilatation without a doubt others to the contrary is the factor of importance in the etiology of pyelitis.

DR L M RANDALL, Rochester, Minn. I should like to emphasize again the value of a definite routine in the care of the bladder in the puerperium. Without this one has to depend considerably on the patient's complaint of discomfort and inability to void and by the time this complaint is made overdistention may have occurred. We have found since the institution of a definite routine that our bladder complications during puerperium have been reduced to a minimum.

URETHROCYSTOGRAPHY IN THE MALE

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The lower urinary tract has been the subject of intensive investigation for the past decade, during which notable advances have been made particularly in the field of instrumental diagnosis and treatment. With increasing application, certain limitations of these procedures became apparent indicating the need for a supplementary method by which a clearer conception of form and function could be obtained. Urethrocystography fulfils this need and should be used as a part of the routine examination of patients presenting certain lesions of these organs.

Although, in our hands urethrography has proved a valuable diagnostic procedure, its scope is limited as it fails to demonstrate pathologic conditions other than those confined to the urethra and its adnexa. Cystography, while more extensively employed and better understood, also has its limitations. Because of the close anatomic and functional relationship of the pos-

delineation than from urethrography or cystography alone. Previous experience with these two methods enabled us to develop a technic for the performance of urethrocystography by combining several procedures previously advocated by other workers with a simplified manometrically controlled syringe devised by us. Our early work convinced us that manometric control adds greatly to the accuracy and value of the procedure,



Fig. 1—Asepto syringe with by pass leading to air chamber trap and manometer

terior urethra, adnexa, vesical neck and bladder muscle, a more accurate concept of their morphology and function can be obtained by their simultaneous and complete



Fig. 2—Normal urethrocytogram oblique view. Anatomic landmarks and sphincteric contours clearly defined. Verumontanum demonstrated as a negative shadow.

minimizing its dangers and aiding in the duplication of observations on repeated examinations. The types of apparatus previously introduced are too cumbersome for routine use and on this account have been discarded by many workers.

Our syringe (fig. 1) possesses all the essential elements of a pressure apparatus. It consists of a two ounce Beckton Dickinson Asepto syringe modified by the inclusion of a by-pass and trap which prevents the flow of the medium into the manometer and renders possible the retention of all the advantages of manometric control while employing a simple syringe technic.

The complete and simultaneous delineation of the lower urinary tract by this technic provides a valuable supplement to the usual methods of diagnosis, and in certain instances in which instrumentation is impossible, undesirable or contraindicated, urethrocystography delineates the nature of the lesion and indicates the choice and extent of operative measures.

CONTRAST MEDIUMS

Solutions in the concentrations ordinarily employed in cystography are usually too radiopaque and may obscure smaller intruding masses and the outline of the bladder base when used for urethrocystography. We prefer a 3 per cent solution of sodium iodide, although in bladders of large capacity a 2 per cent solution is sufficient. Various substances have been advocated

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for urethral delineation. We believe that any solutions used for this purpose should be nonirritating, sufficiently radiopaque, sterilizable, nontoxic, miscible with urine, and harmless if introduced into the circulation. The preparations of iodized oils do not fulfil all these requirements. The various compounds used for intravenous urography are ideal but too expensive for routine use. Simple solutions of sodium iodide in concentrations sufficient to give shadows of adequate density cause irritation. In our experience, equal proportions of a 20 per cent solution of skiodan and a solution consisting of sodium iodide 17.5 per cent, sodium bicarbonate 2 per cent and gelatin 1 per cent provide a medium adequate for ordinary use. Increasing the proportion of skiodan obviates any tendency toward irritation. The fact that the use of improper solutions may give rise to chemical urethritis of varying grades of severity and duration should be borne in mind.

TECHNIC

The patient is placed on an x-ray table equipped with a Bucky diaphragm. A small catheter is gently introduced under careful asepsis, the bladder capacity estimated with sterile water and a quantity of the 3 per cent solution of sodium iodide slightly less than the estimated capacity is introduced through the catheter, which is then withdrawn. Gentleness of instrumentation is important as it promotes relaxation and gains the cooperation of the patient. After trying the various positions, we have come to the conclusion that the oblique and anteroposterior positions are most satisfactory. During the first exposure the patient is placed

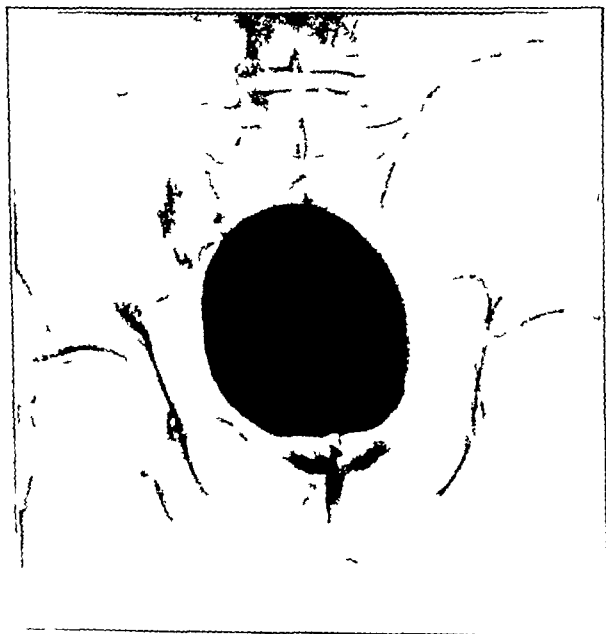


Fig 3—Pneumobrosis of posterior vesical lip two and one half years following nephrectomy for calculus pyonephrosis showing associated posterior urethritis, prostatic and elevation of bladder base. Contracted bladder and ureteral remnant also demonstrated. Anterior posterior view.

obliquely on the table with the under thigh flexed and the upper thigh extended. This posture is maintained by the patient or if he is unable to retain this position he is supported by sand bags. The penis is extended below and parallel to the flexed thigh and the urethral contrast solution injected through the meatus the

manometrically controlled syringe providing a safeguard against the use of excessive force. The total quantity of fluid used for urethral distention is approximately 50 to 70 cc. Elaborate methods designed to prevent leakage are unnecessary, as adequate apposition of the bluntly tapered syringe tip and the meatus can be maintained by simple digital pressure. The use of oily solutions increases the possibility of leakage.



Fig 4—Oblique view of inflammatory stricture at bulbomembranous junction. Glands of Littre deformity of bulb tortuous nature of the stricture and irregularly dilated membranous urethra demonstrated.

The tube is focused on the lower portion of the symphysis pubis and inclined toward the head at an angle of 5 degrees. The x-ray exposure is made as the fluid is flowing freely into the bladder. Should the flow be impeded, the patient is instructed to void as the exposure is made. In the exceptional case in which the bladder cannot be entered because of impassable obstruction, the bladder contents may be rendered opaque by the intravenous use of a contrast substance, after which the urethra can be filled in the ordinary manner. A second film is exposed with the patient in the dorsal position the legs extended and the penis drawn down between the thighs. The best roentgenograms are obtained by using an x-ray apparatus of the greatest penetration, thus diminishing the time of exposure.

The statement has been made by Ledoux-Lebard and his associates¹ that the injection pressure should not exceed 300 mm of mercury. Ordinarily the pressure does not exceed from 150 to 160 mm and we have found it unnecessary to go above 220 mm. A drop in pressure of from 10 to 20 mm is usually noted as the external sphincter relaxes. Pressures exceeding 200 mm of mercury suggest the possibility of traumatic spasm or lack of cooperation on the part of the patient which may prevent satisfactory filling of the posterior urethra. Should this occur the procedure must be interrupted the patient reassured and the injection cautiously continued. Excessive pressures may result in

1. Ledoux-Lebard, R., Garcia-Callieron, I., and Peletun, J. J. *Urethrographie*. Paris, 1932. 10-111 (Feb. 6, 1932). *X-Ray Examination of Male Urethra*. J. de radiol. et d'electrol. 15: 473-476 (Sept. 1931).

mucosal injury and, when this occurs in the bulb, the contrast material may enter directly into the vascular system, owing to the intimate relationship of the vessels to the mucosa in this region. In our experience this has occurred only in cases of urethral stricture involving the bulbomembranous junction in which recent instrumentation had been attempted and manometric control was not employed. This efflux may take the form of a slight extravasation with entrance of the contrast solution into a few small vessels, or it may be sufficiently extensive to delineate the venous channels of the corpora cavernosa and the entire pelvic and gluteal regions (fig 5). Although we have not observed any constitutional reaction or permanent ill effects following urethrovenous injection, its occurrence emphasizes the necessity of employing innocuous solutions. Following instrumental exploration of the canal, an opportunity should be afforded for the traumatized urethral areas to heal before urethrocytography is performed. Furthermore, should both roentgenographic and instrumental investigation be contemplated at one sitting, the former should precede other intra-urethral manipulations. Injections of contrast mediums are contraindicated in the presence of acute infections, active inflammations and recent extensive injuries.

INTERPRETATIONS OF URETHROCYSTOGRAMS

The outlines of the normal urethra (fig 2) are sharply defined and regular, and the contour is symmetrical. The caliber varies with the anatomic areas



Fig 5—Urethrovascular injection in a patient with impassable stricture showing a widespread escape of medium into the venous chain draining into the internal pudendal and hypogastric veins. No manometric control.

of narrowing and dilatation, is widest at the bulb, and diminishes markedly as the membranous urethra is approached. The shadow of the bulb in the oblique view possesses a characteristic onion-shaped appearance, while the tortuous contour of this region in the anteroposterior film is the result of superimposition of shadows. The membranous urethra, in both antero-

posterior and oblique films, is represented as a narrow pyramid with the base situated distally. The posterior urethral shadow is narrower than that of the anterior urethra, is fusiform, and is widest at its midportion. The verumontanum may produce an elliptic area of decreased density in the anteroposterior film or a filling defect on the urethral floor in the oblique view. In the anteroposterior position the posterior urethral shadow



Fig 6—Prostatic enlargement. Oblique exposure showing distortion and angulation of posterior urethra; patent prostatic ducts displaced and widely open internal meatus. Marked intra urethral encroachment and moderate intravesical intrusion demonstrated. Note irregularly dilated bladder with numerous sacculations.

lies between the two pubic bones and terminates at right angles to the bladder base. The bladder has the usual circular or oval contour, with the inferior border parallel to the upper margin of the pubes. In oblique films the urethral shadow overlies the pubic ramus and merges with that of the bladder at an obtuse angle. The curve of the bladder base is larger and more gradual than in the anteroposterior view.

Advanced chronic urethritis is manifested by fairly definite changes. In the anterior urethra those most frequently noted are irregularities of outline and caliber, resulting in a characteristic undulatory appearance of the urethral margins, while the glands of Littre or accessory pockets are demonstrable at times in the oblique view. There may be either dilatation due to atonicity of the walls or loss of the normal dilatability because of infiltration and spasm in the posterior urethra. The internal sphincter and bladder base show no deviation from the normal.

When concomitant adnexal disease is present, the prostatic and ejaculatory ducts are frequently delineated and occasionally the injected medium may be discernible in the seminal vesicles, Cowper's glands and para-urethral pockets. This demonstration of the accessory urethral structures is of diagnostic importance. Our experience confirms the observations of Langer² that normal adnexal structures do not readily permit

2 Langer E. Roentgenography of the Male Urethra. *Venerol Dermat* 6:36-49 (May) 1929. Pulmonary Embolism from the Use of Iodized Oil in Urethrography. *Roentgenpraxis* 4:405-406 (May) 1932. (Comment on article of Eichler P. Pulmonary Embolism from Use of Iodized Oil. *ibid* 4:138-140 [Feb 1] 1932). *Die Roentgendagnostik der männlichen Harnrobre* Leipzig 1931.

entrance of the injected fluid. Flattening of the bladder base and irregularities in its contour may be present, depending on the extent and severity of prostatic involvement.

In advanced prefibrosis of the posterior vesical lip (fig 3) the appearances are those accompanying chronic urethritis with adnexal involvement plus sphincteric irregularities and alterations in the angle of entry of the urethra into the bladder. Changes in contour and regularity of the bladder shadow, if present, are proportionate to the degree of obstruction. While the urethrocytographic changes are often sufficiently characteristic to indicate the nature of these inflammatory lesions, confirmation by clinical and cysto-urethroscopic examinations is desirable.

STRICTURE OF THE URETHRA

The use of the micturitional method for the delineation of stricture is unsatisfactory for, although the proximal portion of the urethra can be outlined, visualization of the constricted area and the distal portion of the urethra may be incomplete. Simple anterior injections do not adequately delineate the urethral lumen proximal to the site of constriction. The combined method clearly depicts the nature of the obstruction and the secondary urethral (fig 4) and bladder changes and is particularly applicable to patients with strictures of small caliber in whom instrumentation is difficult, who present fistulas, or on whom previous operations have been performed. Changes characteristic of chronic inflammation may be present in the



Fig 7.—Moderate intra-urethral and intravesical prostatic enlargement. Few associated changes.

anterior urethra or its accessory glands (fig 4) and false passages may be visible. The most frequent location of constriction of the inflammatory type is at the bulbomembranous junction and the bulb is frequently deformed. Traumatic strictures may occur at any site. The degree of involvement and the character of the lumen in the constricted zone are well delineated. Indications of pathologic changes in the posterior urethra

characterized by irregularly dilated segments are frequently seen and the adnexal passages may be visualized when actually involved. Deformities of the vesical sphincter, the bladder base and the bladder itself, as well as diverticula and vesicorenal reflux, are demonstrated when present. Both views are essential for the complete delineation of the extent of the stricture and all complicating disturbances. Urethrocytography plays



Fig 8.—Prostatic enlargement. Apparent increase in anteroposterior diameter of prostatic urethra. Forward angulation at vesical neck, intra-urethral encroachment and marked intravesical intrusion demonstrated.

an important role in this field, both as a supplementary and as an independent method of diagnosis, and it also provides a graphic record of the progress of these cases.

ENLARGEMENT OF THE PROSTATE

There are no characteristic changes in the anterior urethra, bulb or external sphincter in prostatic enlargement. The spindle-shaped contour of the posterior urethra is altered in the presence of encroaching masses and the verumontanum may show evidences of lateral compression. The direction of the prostatic urethra may deviate laterally and anteroposteriorly, depending on the size and disposition of the prostatic lobes. Forward displacement of the supramontane portion of the prostatic urethra is a common finding in median lobe enlargements and, in the smaller types, may be the only discernible change. This distortion results in the loss of the normal obtuse angle of entry of the urethra into the bladder and is manifested as a Coude or bi-Coude deformity in the oblique view. Median bars produce appearances similar to but less extensive than those caused by median lobes. In the lesser grades of vesical neck deformities the roentgenographic changes should be considered in conjunction with the data obtained from cysto-urethroscopy.

The internal sphincter may show no change. In the presence of large intravesical lobes or of intra-urethral encroachments that render the sphincter rigid the displaced internal meatus is widely open and shows evidence of distortion. Elevations and irregularities of the bladder base are proportionate to the degree of

intravesical prostatic intrusion. Any change in the bladder outline due to loss of elasticity, trabeculations, sacculations and diverticula is demonstrated. Concomitant tumors, calculi and vesicorenal reflux are readily demonstrable. The apparent increase in caliber of portions of the urethra, variations in density with the appearance of double columns of fluid and confusion as to the relative sizes and disposition of the various lobes may lead to errors of interpretation unless both planes of exposure are utilized (figs 6, 7 and 8).

Carcinoma of the prostate produces urethrocytographic deformities similar to but more irregular than those caused by benign enlargements. Filling defects and irregularities resulting from extensions involving the bladder wall may be shown. Although the diagnosis of prostatic enlargement is readily made by the usual methods of examination, urethrocytography definitely indicates the size of the enlargement and its relation to the urethra and the bladder, and gives a more accurate idea of the contour and location of projecting and overhanging intravesical intrusions than can be obtained by any other method. Such data enable the surgeon to adapt his operative procedure to the needs of the individual case and, in those cases in which endo-urethral resection is elected, provides an indication of the location and the amount of tissue to be removed.

OBSERVATIONS FOLLOWING OPERATIONS FOR VESICAL NECK OBSTRUCTIONS

Urethrocytography provides a graphic method of studying the results of operative procedures for the relief of vesical neck obstruction. Regardless of the surgical method employed, good results are characterized by the decrease or disappearance of obstructive manifestations. Following successful suprapubic enucleation, the sphincters are usually intact and, after an interval, the prostatic urethra tends to resume a normal contour. The distal portion of the verumontanum may be discernible. The appearance varies with the completeness of enucleation, degree of operative trauma to adjacent structures and other factors interfering with proper healing. Evidences of cavitation in the prostatic bed, diverticular pockets, atony or constrictions of the internal sphincter and irregularities in the lumen of the prostatic urethra are common observations in unsatisfactory cases. We have demonstrated injury of the external sphincter and membranous urethra, strictures involving the entire length of the prostatic urethra, and complete atresia of the urethral lumen following suprapubic prostatectomy.

Subsequent to the performance of endo-urethral resection, the extent to which the obstructions have been removed and the urethral contours restored can be accurately ascertained. Although adequate canalization may have been accomplished, deformity of the bladder base may persist as a result of the undisturbed intravesical portions of the gland. The nature and location of these remaining intrusions are shown in the urethrocytogram and any necessity for further resection is clearly demonstrated.

It is readily possible to ascertain the extent of involvement of the lower urinary tract in neurogenous disorders by means of urethrocytography. The condition of the bladder musculature (fig 9) and the functional capacity of the sphincters are well shown. The coexistence of *tabes dorsalis* and prostatic enlargement can be demonstrated by this method. Urethrocytography may prove of value as a graphic supplement to cystometric observations.

RECAPITULATION

Our purpose in this communication has been to call attention to the advantages of a diagnostic method that has the same applicability to lower urinary tract conditions as ureteropyelography has to those of the ureter and the kidney. Just as the latter procedure must be used in conjunction with cystoscopic and other observations, urethrocytography must be supplemented by observations derived from all sources. The statements made in the preceding portion of this presentation are therefore, based on combined roentgen, instrumental and clinical studies during the past two years.

The successful employment of this procedure depends on the establishment of a simple but definitely standardized technic. The syringe and the method developed by us are presented as a means of accomplishing this object.



Fig 9—*Tabes dorsalis* with vesical symptoms but without incontinence

We have adopted the use of watery solutions because in addition to fulfilling all the requirements of a satisfactory medium, they penetrate readily into the smaller canals and pockets. Iodized oils do not possess these advantages. Their use may be attended by danger if a considerable quantity is introduced into the circulation, as the result of urethrovascular injection. We have at different times employed solutions of various types and concentrations and at present are convinced that eventually aqueous solutions will be found best suited for this purpose.

The combined method has adequately demonstrated bladder, urethral and adnexal changes and has proved less expensive, less time consuming and more satisfactory as a routine diagnostic method than urethrography or cystography as individual procedures.

CONCLUSIONS

- 1 With careful technic and innocuous solutions, urethrocytography is harmless.
- 2 Aqueous contrast mediums are advocated.
- 3 Gentleness in manipulations and avoidance of excessive pressure are essential.

4 Manometric control is recommended and a syringe for this purpose is presented

5 The possibility of urethrovascular injection exists regardless of the type of solution used and precautions should be exercised to minimize its occurrence

6 Urethrocytography is a valuable diagnostic method and should be employed in the routine examination of patients with disorders of the lower urinary tract

7 Urethrocytograms provide a graphic record of the progress of each case. They aid the surgeon in the selection of operative procedures and in evaluating the final results

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ABSTRACT OF DISCUSSION

DR M A NICHOLSON Duluth Minn The idea of using both cystogram and urethrogram in the same picture originated with Dr Hyams and his associates. Their method differs somewhat from mine. My pictures were all made with iodized oil. These urethrograms illustrate the fact that the oil solution penetrates into the finest ducts and through threadlike strictures. The patients have not the slightest discomfort with its use and its cost will compare favorably with the intravenous dyes as it may be diluted from 50 to 60 per cent. Many have questioned whether this procedure has practical value. In one case a man for seven years passed urine through a fistula in the scrotum. I was unable to pass anything down the anterior urethra except a very fine filiform bougie. An anterior urethrogram showed multiple strictures of the urethra. The sinus was dissected out and a new urethra constructed, to the great satisfaction of the patient. I think this case demonstrates the practical value of urethrography.

DR ROBERT GUTIERREZ New York Dr Hyams and his collaborators made an appeal for urethrocytography and I feel strongly that this should be a routine method of examination particularly when there are conditions that cannot be revealed by other methods and it is essential to establish an accurate diagnosis before operation. Urethrocytography has served to emphasize the fact that intravenous urography does not entirely solve the problem of establishing a correct diagnosis. It does not assist in discovering pathologic lesions affecting the lower part of the urinary tract. Some years ago Dr Lowsley and I reported six cases of diverticula of the urethra. At this time I collected and tribulated from the literature 116 cases. I was amazed to see that over 50 per cent of them were not properly diagnosed but were found post mortem or at the operating table. In but few cases was the diagnosis made before the operation by the use of urethrograms as in the cases that we reported. Certain points of interest that we stressed in our paper are worth bringing up at this time. Namely that the urethrogram should be made by injecting the urethra and the bladder at the same time and that it should be taken at the time of micturition. Diverticula of the urethra acquired or congenital may be found in any part of the urethra but they are more commonly present in the prostatic urethra particularly after rupture of a prostatic abscess that has been entirely overlooked. In most of these cases surgical excision is the proper indication. A study of the literature has revealed that when diverticula of the membranous or prostatic urethra are present a resection has often resulted in a perineal fistula necessitating several operations. In order to obviate these complications we recommend diverting the urine from above by cystostomy previous to the operation. Thus the perineal wound is given a chance to heal by primary union and without complications. I may repeat that while intravenous urography is of great value one must bear in mind that it is not the key to all conditions encountered in modern urology and particularly in pathologic lesions affecting the lower urinary tract as the so-called incurable strictures tumor diverticula and other unrecognized conditions in which urethrograms are properly indicated in an effort to establish a correct diagnosis.

DR HARRY P LEE, Iowa City Last year Dr Alcock returned from the meeting of the American Medical Association enthusiastic over air cystograms. We recognized the dangers accompanying the air cystograms but nevertheless started doing them, and the pictures were so superior to the sodium iodide cystograms that we have continued doing them and have developed a technic of doing air cystograms in every prostatic case that is seen in the clinic. We have found that air cystograms are not very good in delineating diverticula of the bladder, so we take plain plates in order to eliminate any stones and then take an anteroposterior sodium iodide cystogram to show any diverticula. We found the air cystograms of great assistance but needed a new technic to visualize the prostatic urethra. The use of iodized oil in all cases in a clinic is very expensive, so Dr Flocks has had made up a jelly and incorporated in this iodized oil which gives a semiliquid material the consistency of which can be changed by adding any amount of water necessary. We then do a combined air cystogram and iodized oil jelly urethrogram with the patient at about a 45 degree angle and in this way visualize the prostate and the prostatic urethra. We have done more than 300 air cystograms and have had no trouble so far.

DR N G ALCOCK, Iowa City I am enthusiastic over urethrograms and do not know how I could get along in prostatic work without air cystograms and urethrograms. This gives us much more accurate information than cystoscopy does.

DR J A HYAMS New York The value of urethrocytography lies in the complete delineation of pathologic changes located in the urethra, adnexa or bladder. This film indicates the presence of a large tumor of the bladder wall, which overlies the right urethral opening. Above the filling defect caused by the tumor, the ureter is partially delineated by the reflux of the contrast medium. In his presentation, Dr Herbst emphasized the frequent association of diverticulum of the bladder with obstructive vesical neck changes. This method lends itself to a graphic demonstration of changes of this type. We agree with Dr Nicholson that urethrography has a definite place in the delineation of the lower part of the urinary tract but feel that its field is limited. In stricture of the urethra, our combined method is more advantageous than the urethrogram made by simple injection because it delineates not only the nature of the obstruction but the secondary urethral and bladder changes as well. The possibility of urethrovascular injection contraindicates the use of any contrast medium that fails to conform to the essential requirements previously detailed. The iodized oils, plain or combined with various vehicles, whether bland oils or jelly do not fulfil these requirements. The numerous reported accidents following air distention of the bladder and urethra contraindicate its routine use, particularly when innocuous mediums are available. We wish to stress the need of gentleness, controlled pressure and the use of safe contrast solutions and to emphasize the fact that urethrocytograms delineate not only surface but subsurface changes as well.

The Proof of a Drug's Efficacy—It seems unbelievable that the profession can long continue tolerant of a system under which drugs and other remedial measures are vaunted on an inadequate basis of recorded experience, or that doctors should be almost forced by popular clamor to give and to transfer allegiance, an allegiance stimulated by report of advertisement and not by proved worth temporarily to this remedy or to that. It is not through error but often fallacious general impressions that full progress is to be expected but mainly through deliberate unbiased and untiring study of the reactions of patients to given remedies. It is the duty of clinical science in this branch of its activity to maintain close linkage with pharmacology but it is equally its duty clearly to recognize that so far as both manner and intensity are concerned the action of a drug on man is not necessarily the same as the action on an animal and that the action on the diseased is not necessarily the same as on the healthy man. The proof or disproof of a drug's efficacy rests finally on the test in patients.—Lewis Thomas, *Clinical Science, Lancet* 2:905 (Oct 21) 1933.

SKELETAL TRACTION IN TREATMENT OF FRACTURES OF SHAFT OF TIBIA AND FIBULA

W K WEST, M D

OKLAHOMA CITY

The most important points to be considered in the treatment of fractures of the tibia and fibula are

- First, general condition of the patient
- Second, extent of resulting permanent disability
- Third, length of temporary total disability
- Fourth, cost of medical care

In the consideration of these four major problems, I agree that the general condition of the patient is most important, but that phase of the subject cannot well be discussed here. Therefore, from a technical standpoint, the first real problem is the prevention of permanent partial disability. It should be the most important consideration, more important than the temporary total disability, with its resulting loss of time and loss of wages, also more important than the cost of medical care.

Provided as good results could be expected in all cases of severe fractures of the tibia and fibula as are expected in the cases of simple transverse fractures, a

ing the maximum degree of normal function. In the simple types of fractures of the tibia and fibula, either a molded plaster splint or a bivalved circular plaster bandage is sufficient and calls for no hospitalization beyond the incidence of reduction and application of fixation, but, unfortunately, severe multiple or comminuted fractures do not respond favorably to these

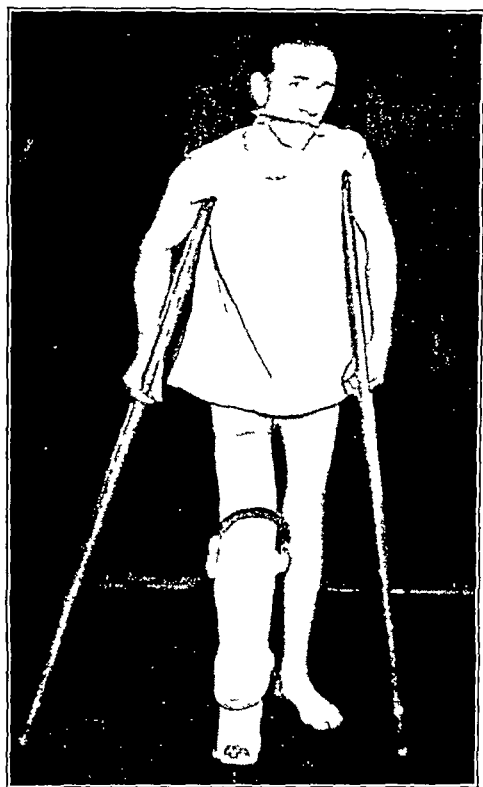


Fig 1—Compound comminuted fracture of tibia and fibula treated by wire fixation above and below fracture. Patient able to leave the hospital within a few days.

circular bandage or the splint method of treatment would be far more practical than skeletal traction. But many factors arise to make the treatment of these severe cases very complicated and expensive in obtain-



Fig 2—Fixed wire traction above and below fracture after reduction by weight traction.

simple measures. As a rule, fractures of the tibia and fibula, unless the case is of several or more days' duration, can be reduced, but the real difficulty is in maintaining reduction. Loss of bony contact results in angulation and overriding because of involuntary muscle spasm. In these severe cases, the swelling is very marked, and, as soon as the leg decreases in size, the appliance is too large, allows deformity to take place and permits changes in the relationship of the bone fragments.

Traction is the best means to combat tendencies to deformity. Lower leg skin traction has not proved to be very practical, especially in cases in which union is slow.

Skeletal traction has many advantages. Space will not permit the discussion of the other types of skeletal traction, such as the Steinmann pin, calipers, and the like. In all my cases the Kirschner wire technic has been used as follows:

1 Cases in which weight traction is used in conjunction with the Braun frame, as described by Boehler, the Kirschner wire being introduced through the middle of the os calcis, for example cases coming in several days after injury, also spiral or badly comminuted fractures.

2 Cases in which the wire is introduced through the os calcis and reduction carried out immediately, followed by the use of the long leg plaster bandage with the knee flexed. The wire and bow are incorporated in the cast. These cases are usually those in which the fractures are low in the tibia and fibula. A spinal or general anesthetic is used when a manual reduction is done at the time the wire is introduced.

3 Cases in which the fracture is in the middle or upper third. Two wires are placed, one just below the knee and the other just above the ankle. A cast is applied to the fracture site above and below, then with traction applied, the two casts are united by connecting plaster

In the first method it is necessary to hospitalize the patient for a sufficient time for reduction of the fracture and in some cases until there is considerable callus before the weight is released. The second and third methods enable the patients to be out of bed immediately, therefore hospitalization is usually unnecessary.

These methods are not new, as the principles of skeletal traction in fractures of the tibia and fibula have been described by many men, such as Conwell, White and Eikenbary.

In the first group of cases, skeletal wire traction in conjunction with the Braun frame, is used in cases

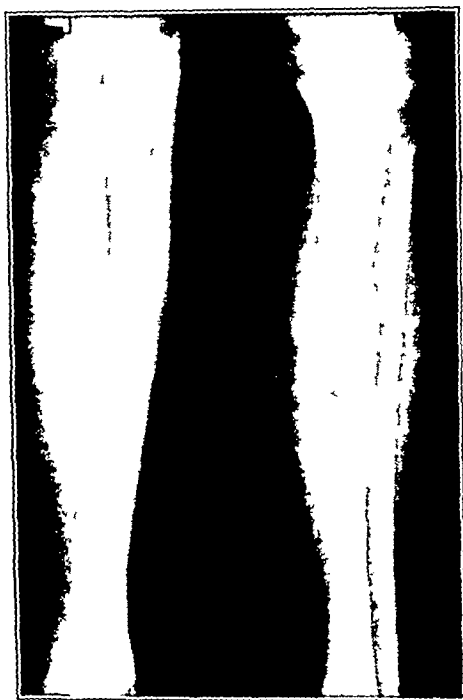


Fig 3—Union twelve weeks after reduction

in which the fracture is of several days' duration or in cases in which it is thought best to maintain perfect alignment and still permit the leg to be inspected constantly. A local anesthetic is sufficient in this type of case. During the time this method is carried out it is necessary for the patient to remain in the hospital. As soon as the reduction is satisfactory and the general condition of the leg will permit a circular plaster bandage is applied with the wire and bow incorporated in the cast in the average case for a period of about two weeks.

In the next group of cases, comminuted fractures in the lower third and into the ankle joint may be treated by introducing the Kirschner wire through the os calcis, then by traction on the bow which is attached to the wire on each side the fracture may be reduced and with the knee in a slight flexion position and the foot at a right angle a circular plaster cast may be applied from the middle of the thigh to the tips of the toes incorporating the wire and bow in the cast. The cast may be split to allow for swelling and not interfere

with the wire fixation. At the end of from three to four weeks, the wire is removed at the time the cast is changed. This method holds the fragments satisfactorily and allows the patient to be on crutches and leave the hospital immediately.

In the third group of cases, in which the fractures are in the upper and middle third of the shaft, I have found it best to introduce two wires, one above the fracture and one below, the upper wire being placed about 3 inches below the knee and the lower about 1 inch above the ankle. Bows are attached to maintain tension in the wire. The plaster is applied from the groin down to the fracture line, incorporating the upper wire and bow. A cast is then applied from the tips of the toes to the fracture line, incorporating the lower wire and bow. Then, by manual traction, the fracture is reduced, and the upper and lower plasters are united.

Fractures seen within the first few hours are very satisfactorily reduced by this method. In these cases the patient may be on crutches within a few days and avoid the cost of hospital expense. In the majority of cases in which there is considerable comminution and in the multiple types as well, union is slow. By using this method, the fragments will be held accurately in spite of the fact that the leg will show the usual atrophy.

There has been some criticism of the use of skeletal traction because of the expense of bows, wires, wrenches, drills and the like. From my experience, I feel that in a considerable number of fractures, skeletal wire traction has no substitute. Undoubtedly, many cases that formerly went to open operation may be treated satisfactorily in this way. Therefore the equipment necessary should be obtained by any one who takes on the responsibility of caring for severe fracture cases.

In compound fractures, the fragments can be maintained in proper position by using either the wire weight traction or the two-wire fixed traction. A window may be cut in the cast and the wounds dressed when necessary without danger of the fragments slipping, because of the loss of continuity of the circular plaster.

After ample callus is in evidence, the wires and cast may be removed and a long or short laced leather cuff brace applied. In fractures of the upper third, it is necessary for these braces to extend above the knee.

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ABSTRACT OF DISCUSSION

DR F J GAESLEN, Milwaukee. This paper illustrates the great advantages that have come through the use of skeletal traction and particularly through the use of the Kirschner technique which is deservedly becoming popular. I believe that more extensive use of skeletal traction will help toward attaining better results and shortening hospitalization periods materially, two factors in which not only the patient himself is vitally concerned but also insurance companies. Pressure sores, always to be feared when a cast is applied after simple traction may be dismissed from the mind when skeletal traction is used and the fixation nails or wires are incorporated in the cast. I would call attention especially to the danger of overriding in oblique fractures. Carey has shown that if a dog's femur is cut transversely and in this transverse fracture a mechanism is interpolated for measuring pressure this device will register far greater pressure on electrical stimulation of the thigh muscles of the anesthetized animal than is recorded during simple weight bearing. The marked tendency to displacement or sliding by one fragment on the other is thus readily understood even though no weight bearing is allowed. Skeletal traction in such a case is especially useful since the incorporation of the Kirschner wires, one above and one below the site of the

fracture, will facilitate further spreading or angulation, should this be indicated after roentgen examination. In the case of fractures extending through joints there is often difficulty in holding the smaller fragment in place even after open reduction. I have maintained fixation by knitting needle spikes. These are readily driven through the bone provided the cortical shell is fairly thin. If the cortex is thick, I tunnel a path for the knitting needle with a Kirschner hand drill, following a suggestion of Dr. Blount to facilitate the driving in of the pin. If two pins are then inserted, more or less at right angles, very secure apposition and fixation are attainable. I believe that this method is far superior to metal or bone screws or nails. The needles are cut short but project sufficiently so that they can be readily located after beginning union, when they may be grasped with a wire nipper, after a nick has been made in the skin, and withdrawn without difficulty. Dr. West is rendering valuable service in again stressing the advantage of skeletal traction, in the differentiation of his cases into various groups, and in emphasizing the point that not all are treated along the same line.

DR. W. B. CARRELL, Dallas, Texas. I am sure that all will agree with Dr. West that certain definite principles must be carried out in the treatment of fractures even though the details of application may be varied. Several years ago it was customary to operate in more fractures in the leg than in recent years. When more was learned about handling traction cases, especially with the aid of the Kirschner wire operations were found to be unnecessary. Likewise, as more thought has been given to gentle manipulation with the advantage of suitable position of the leg and good temporary traction as described by Watson Jones, this plan has been used for many cases which were formerly treated in traction. Whether a fractured leg is treated with open operation or traction or the fragments are manipulated into position due regard must be given the soft tissues, with particular reference to the circulation. In a fractured leg of four or five days' duration with shortening, rapid and heavy traction may do as much harm as vicious manipulation. In such a case the weight should be increased gradually, with stretching of soft tissue which would otherwise be torn. If traction is applied immediately after the injury sufficient weight should be applied at once to overcome the deformity and there should be no additional damage in the soft tissue. This emphasizes another principle in fracture treatment, namely, that all fractures should be regarded as emergencies, and immediate reduction accomplished before soft tissue infiltration occurs.

DR. DANIEL H. LEVINTHAL, Chicago. I want to add to the emphasis that has been placed on early reduction. In spite of the fact that this has been mentioned over and over again, fractures continue to be treated by delayed reduction. Dr. West has added to the work of Orr and Thomson, Kirschner, Boehler and Hockenbush. I want to emphasize the necessity for the accurate introduction of the wire. I was recently called into consultation in a case in which a wire was to be introduced just above the condyles of the femur. Instead, it was introduced into the pouch and was dragged down through the knee joint, with resulting infection. A note of warning should be sounded to men in general practice regarding indiscriminate use of the Kirschner wire, just as in the matter of open reductions and plates. The combination of gas bacillus and tetanus antitoxin should always be at hand. Dr. West mentioned a patient who died of a gas bacillus infection. I am sure that if the combination of these antitoxins is at hand and is given early there will be few cases of gas gangrene. The importance of the posterior sag should be emphasized. Posterior sag in fractures of both bones of the leg produces a disalignment with weight bearing posterior to the os calcis. It is the result of negligence on the part of the surgeon in the course of treatment. I should like to know when Dr. West removes the wire, also how frequently he sees delayed union or nonunion in these fractures. In my experience, fractures of the middle lower third of the leg more frequently go to delayed union or nonunion than any other cases except fractures of the neck of the femur. There is one disadvantage of the wire over the nail in fixed skeletal traction in that one has to use the bow with the wire and leave it outside the cast. For this reason I prefer the Steinmann nail, as used by Orr and Thomson

for fixation above and below after obtaining the reduction and incorporating the nails within the plaster, as Dr. West does the wires with their bows, to maintain the position.

DR. W. K. WEST, Oklahoma City. In answer to Dr. Levintal's question regarding the time the wire is removed, there is no time limit any more than there is a time limit as to when one can remove fixation from the tibia. I think that in the lower leg type usually two weeks is long enough. In the shaft of the tibia they are probably kept on sometimes as long as eight weeks and then after that, of course, something else is maintaining the position. Regarding the possibility of nonunion I haven't had nonunion in the cases I have treated but of course the union is always very slow. After eight or ten or twelve or fifteen weeks, when I decide that it should be united I take off the appliance. I would just keep it there until union is obtained. In this series, of course, I did not have nonunion. I don't remember ever having any. I make that as a rather broad statement because I know that in many cases there is nonunion in spite of anything one can do. Regarding the argument of some of the general surgeons to the effect that the simple methods of treatment should be returned to that the wires and bows and wrenches and drills are too complicated and too expensive I do not think that they are. I think they are a permanent armamentarium and will be used indefinitely. They are not especially expensive. After one uses them a time or two, the technique becomes simple. I think it is also felt that there will be some cases in which this armamentarium is necessary and that there is a way in which many open operations may be avoided.

INCIDENCE AND PREVENTION OF INCISIONAL HERNIAS

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Incisional hernias continue to remain serious surgical problems. Countless procedures have been advocated for the cure of them, numerous suggestions have been offered to prevent them.

It seems reasonable to presume that though considerable time and concentration are utilized in the performance of the operation within the abdomen, often a too hurried and careless closure is effected by a weary operator or an inexperienced assistant.

INCIDENCE

The incidence seems variable according to the reports. In hospitals where many hernias are operated on incisional hernias are less frequent than other types of ruptures. B. L. Coley,¹ in 3,000 consecutive herniotomies performed at the hospital for the ruptured and crippled in New York, reported only a 1.5 per cent incidence of postoperative hernias. During a four year period (1923 to 1927, inclusive) at the Boston City Hospital² there were 304 patients with this condition operated on. Stanton³ noted 24 postoperative hernias following 500 laparotomies which he performed, all were ascribed to improper union of the fascial layers anterior and posterior to the rectus muscles. Masson⁴ cited a 10.8 per cent incidence of incisional hernias in 5,502 cases of hernia at the Mayo Clinic and found

From the Surgical Service of the Roosevelt Hospital.
Read before the Section on Surgery, General and Abdominal at the Eighty Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Coley, B. L. Three Thousand Consecutive Herniotomies with Special Reference to Recurrence Based on 837 Followed Cases. *Ann Surg* 80: 242, 1924.

² Hepburn, J. A. Boston City Hospital Treatment of Postoperative Hernia. *New England J. Med* 204: 1035-1037 (May 4) 1931.

³ Stanton. *The Cyclopedia of Medicine* vol. 6, p. 802.

⁴ Masson, J. C. Postoperative Ventral Hernia. *Surg. Gynec. & Obst.* 37: 14 (July) 1923.

wound separates in the inner layers and an incipient hernia is inaugurated. Widespread is the conception that operative abdominal wounds in patients afflicted with cancer, diabetes and syphilis heal slowly and insecurely, yet if disruption occurs and the wound is carefully resutured how firmly they finally heal!

Infection unquestionably produces a more rapid disintegration of catgut, knots more easily slip apart when

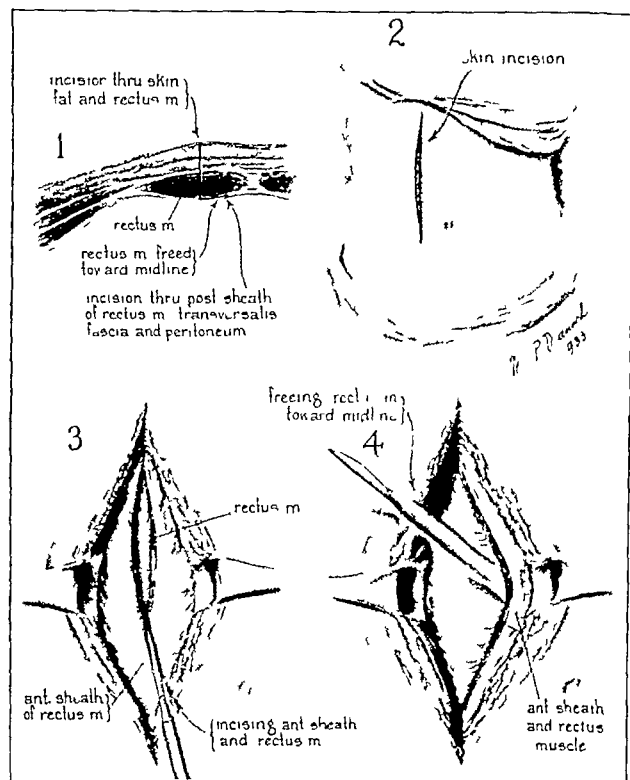


Fig A—Drawing showing the various stages in the approach to the right upper quadrant of the abdomen. The left half of the rectus sheath and rectus muscle are pushed far over toward the midline as is shown in 1 and 4.

bathed by infected serum or frank pus, and a cough, sneeze, hiccup or increased abdominal pressure from whatever cause readily forces a small bit of omentum or even a knuckle of bowel well up between the edematous, sloughing edges of the peritoneum. Unless interrupted sutures are used the peritoneal wound may be forced open throughout its entire length. In a mildly infected upper right rectus gallbladder incision I have seen on the seventh postoperative day every peritoneal (or anterior rectus sheath) interrupted suture of chromic catgut tear through the medial peritoneal edge under the sudden pressure of a severe cough, and yet not a suture has been found untied or in any manner disintegrating.

With sloughing of large areas of fascia of the external oblique or of the rectus sheath in infected wounds, it is easily understood why herniation so readily follows. To prevent sloughing it is deemed wise to suture only the peritoneum in an infected McBurney wound, and in the infected rectus or midline incisions interrupted sutures, properly spaced, permit of seepage, and the avoidance of excessive tension will mitigate against the embarrassment of the circulation of the tissue layers.

Competent abdominal surgeons less frequently drain the slightly, or even moderately, infected peritoneal cavity. Shipley and Bailey⁷ do not employ drainage in acute appendicitis with early peritonitis. They emphasize that "the important things in early peritonitis are not the kind and number of organisms in the peritoneum or the amount or extent of the exudate, but the source of the infection and whether or not the avenue through which the organisms are reaching the peritoneum may be gotten at and closed. If this can be accomplished in the early stages of peritonitis, drainage need not be so widely used as has been practiced." One of their conclusions states the matter clearly: "drains are soon sealed off and do not drain any considerable portion of the peritoneum." By closing cholecystectomy wounds without drainage many incisional hernias have been prevented. I believe, however, that this should not be done always as a routine. To close the wound tight and drain through a stab wound in the right flank serves the twofold purpose of firm closure and drainage, a dog tongue-shaped right lobe of the liver may make drainage by the flank stab wound too circuitous, thus necessitating the use of a drain in the upper angle of the right rectus wound. The wounds of the abdominal wall in practically all operations on

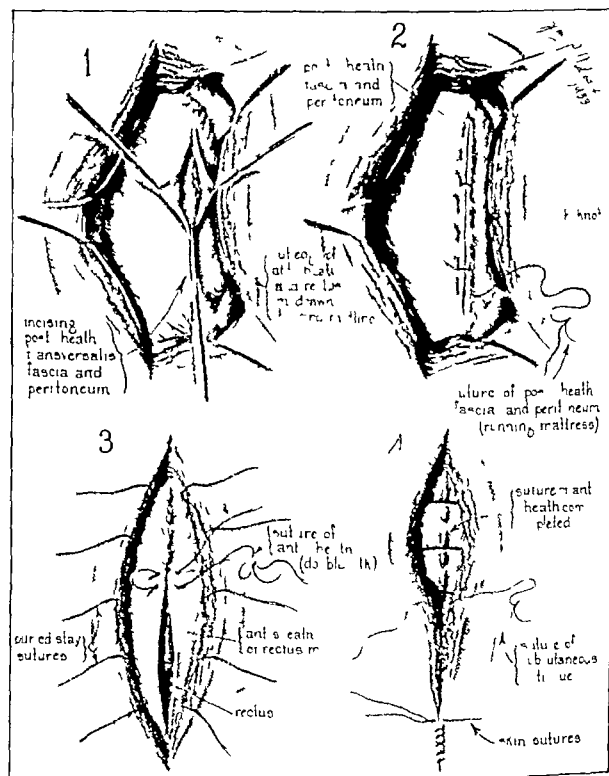


Fig B—Drawing showing the incision through the posterior sheath of the rectus muscle, transversalis fascia, and peritoneum well over toward the midline in 1, 2, 3 and 4 show the method of stay suture of the peritoneum, buried stay sutures for the rectus muscle sheath and interrupted figure of eight sutures for the anterior sheath of the rectus muscle.

the stomach are closed without drainage, thus accounting for the relatively few cases of herniation in the left upper quadrant.

Drains should be left in the peritoneal cavity for a minimum period of time. To minimize and sometimes

7 Shipley, A. M. and Bailey, H. A. Treatment of Appendicitis Complicated by Peritonitis. *Ann Surg* 96: 537 (Oct.) 1933.

prevent the occurrence of a postoperative hernia, employ the soft cigaret or Penrose drain in preference to glass tubes, rubber tubing or any variety of wrapped tube drain.

The smallest piece of omentum protruding through a pinpoint opening in the peritoneum, either in the line of suture or through a needle tear or slit to the side of either edge, produces a large percentage of postoperative hernias.

To prevent incisional hernias in wounds of the anterior abdominal wall, clean or infected, a meticulously careful suture of the peritoneum, transversalis fascia and posterior sheath of the rectus is of paramount importance. Secure apposition of the cut edges of the transversalis fascia is the keystone to a firmly united wound. A separate suture for this particular muscle fascia layer, if it is well developed, is an added safeguard.

A satisfactory closure of any wound is one wherein anatomic structures are perfectly replaced and held thus by some material which will not interfere with a safe and complete healing. In an actually or potentially infected wound catgut is unquestionably the suture and ligature material of choice, whereas in a clean wound I am convinced that silk has proved itself preferable, for two reasons, first, that a clean wound is less likely to become infected, and second, that fewer postoperative hernias result.

The following procedure in the closure of a clean upper, middle or lower right rectus wound, I feel certain will lower the incidence of, and no doubt at times prevent incisional hernia. In a measure the type of approach to the peritoneal cavity is of importance. A muscle-splitting procedure predisposes to a more firmly healed wound, and particularly does it conform to the closure herein outlined. I prefer the incision through the posterior sheath of rectus, transversalis fascia and peritoneum to be made more medially (from $\frac{3}{4}$ to 1 inch [2 to 2.5 cm]) than the incision through the skin, anterior sheath and rectus muscle. The reason is that this layer is thus more easily closed, for the outward pull of the horizontal fibers of the transversalis muscle is strong, and the closer one gets to the midline the less is the chance of pulling and tearing this most important structure. As a rule, the peritoneum, transversalis and posterior sheath of the rectus are closed with eversion of the edges by a running mattress suture which is locked at several points before it is finally tied at the lower angle of the wound. The greatest care is exercised in obtaining a firm bite in the transversalis fascia to close this structure well with a nonabsorbable suture almost certainly insures against incipient herniation. The next step is to undermine the skin and subcutaneous tissue for a distance of $1\frac{1}{2}$ inches (3.8 cm) on either side preparatory to the placing of deep or buried stay sutures of doubled medium-sized silk as suggested by Heuer: four or five such sutures are placed about 1 inch from the cut of the anterior sheath and rectus muscle and are left untied. Interrupted mattress or figure-of-eight sutures then firmly close the anterior rectus sheath. The buried stay sutures are pulled taut and carefully tied, each suture including anterior rectus sheath and rectus muscle. Fine properly spaced interrupted sutures approximate the subcutaneous tissue and interrupted sutures close the skin.

I believe that of wounds in the lower part of the abdomen aside from the clean McBurney incisions one

made in the midline from the umbilicus to the symphysis offers more in the prevention of incisional hernia than one in which a small strip of rectus muscle is preserved, for surely this strip of muscle atrophies and leaves an area of weakness where herniation is likely to occur.

In the gynecologic service of the Roosevelt Hospital postoperative hernias occur rarely, owing primarily to few drained wounds and utilization of Pfannenstiel's incision, however, where midline incisions are used, great care is exercised in exposing the muscle at the time of closure and in suturing like structures by layers. In any noninfected wound in the lower third of the abdomen, where the muscles appear friable and the fascia itself is thin, an imbrication of the fascial layer by means of a running suture of living or dead (ox) fascia will guarantee a solidly healed wound.

In those unfortunate patients in whom a repaired incisional hernia recurs, sutures of either living fascia or the ox fascia of Koontz are often indicated, even at the primary operation. I have found that ox fascia soaked in warm saline solution for two hours prior to using it provokes scarcely more reaction of tissues than strips of living fascia lata, and I consider it necessary in suture equipment, in fact useful in the repair of any form of rupture. Insistence that every obese or debilitated person with an incisional hernia undergo a proper preoperative preparation will lessen the chance of recurrence.

SUMMARY

Incidence—Over an eleven year period at the Roosevelt Hospital (1922 to 1932, inclusive) there were 1928 hernias operated on. Of these, 120 were incisional hernias, an incidence of 6.02 per cent. An analysis of the 120 postoperative hernias showed that the great majority were in patients beyond the thirty-fifth year. Over 60 per cent of the hernias developed within two months following the original operation. In the right upper rectus incisions retraction of the muscle outward resulted in more incisional hernias than occurred in the muscle-splitting procedures. In the intermuscular incision group thirty-six incisional hernias followed operation for acute appendicitis in which the peritoneum was drained. In a follow-up group of 444 patients operated on for acute appendicitis through the McBurney incision the peritoneal cavity was drained in 162 and not drained in 282. Of the 162 patients in whom the wounds were drained twenty-one developed definite postoperative incisional hernias giving an approximate incidence of 12.9 per cent in this group. I do not agree with Garlock's contention that there are fewer postoperative hernias following suture alone of the peritoneum in the drained McBurney wounds.

Preventive Measures—1 Drainage of the peritoneal cavity is employed less frequently by competent abdominal surgeons. Cholecystectomy wounds are closed tightly. Where indicated one should employ stab wound drainage through the right flank. The drains are left in the wounds for a minimum period of time. Cigaret drains are preferable.

2 Suture of the peritoneum and transversalis fascia in the upper third of the abdomen is the most important step in the closure of any wound. In the lower third of the abdomen imbrication should be done with running sutures of live or dead (ox) fascia.

3 Where possible all wounds are sutured by layers. Excessive tension is avoided.

4 Fascial repair is done in every case of recurrent incisional hernia.

5 Patients suffering from systemic disease should undergo careful preoperative rehabilitation

6 The use of silk is preferred throughout in the closure of clean wounds

107 East Sixty-Seventh Street

ABSTRACT OF DISCUSSION

DR AMOS R KOONITZ, Baltimore I am especially interested in what Dr Cave had to say about the use of silk in the closure of clean wounds. Silk has two advantages. First, it is not absorbed and therefore can be depended on to stay where it is placed until firm healing is secured. Second, there is very little reaction in the tissues around the silk sutures. The one big disadvantage of silk is that in the presence of infection it acts as a foreign body, and a sinus forms and persists, going down to the offending suture until the suture works its way out or is removed by the surgeon. This single disadvantage of silk is far outweighed by its advantages. Infections in clean wounds are now so rare as to be almost entirely negligible. On the other hand, what are some of the experiences with catgut? The chemicals with which catgut is treated in preparation cause a moist reaction in the tissues and a type of healing not nearly so firm as that obtained after suture with silk. Every one who has used much catgut has seen abdominal wounds break open two or three weeks after operation and the patient temporarily disemboweled. I have never seen that happen with silk. Another important point is the preoperative preparation of obese persons before attempting a cure for a postoperative hernia. Excessively obese persons should be put on a rigid diet and have their weight materially reduced. A great deal of the excess fat of obese persons is carried in the omentum. This increases intra-abdominal pressure. Besides, the fat in the abdominal wall weakens that structure and both these factors militate against a cure of the hernia. Dr Cave makes it a practice to soak the fascia in physiologic solution of sodium chloride for two hours before operation. This is an excellent practice, as it is highly desirable to get all the alcohol removed before the fascia is implanted. One very important point in the operation for postoperative hernia, especially when fascia strips are used, is the question of drainage. Most of these patients are more or less obese, and a very extensive dissection is necessary in order to free the fascia in all directions from the large defect. If these wounds are not drained a certain amount of serum almost invariably collects and tends to soften the tissues and delay healing. If the wounds are drained through an opening in the operative incision, secondary infection almost invariably ensues. My practice has been to use cigaret drains through stab wounds in the flank. These drains may be removed in from three days to a week and they keep the operative site absolutely dry, thus promoting firm and secure healing.

DR ROBERT L PAYNE, Norfolk, Va. The ideal closure of an abdominal incision should include three factors: first, the approximation of every separate and distinct layer, second, total and complete obliteration of all dead spaces, third, the consummation of the first two points without tension on the blood and nerve supply of the tissues. I subscribe to the author's view that all ventral hernias begin from the inside out and that the most important structure of all those in the abdominal wall to coaptate properly is the transversalis fascia or the posterior sheath of the rectus. If this is properly approximated and held, the other structures will not separate. I believe that we are eventually going back to the procedures of our fathers and close all wounds with interrupted sutures. I believe that silkworm gut through and through with careful separate coaptation of all the layers and with whatever material the individual operator prefers will give the best result. I cannot subscribe to the author's views regarding the use of silk. The first three years of my professional life I spent pulling out silk suture knots that were used in the hospitals where I worked. I never put in silk except in overlapping the full thickness of the abdominal wall and then only after boiling that silk on three consecutive days. One of the best procedures for the protection

of the patient against the occurrence of an incisional hernia is careful supervision after operation and providing for thorough and consistent postoperative narcosis. I mean by that that morphine or some other form of narcosis should be used freely enough to prevent those mechanical factors that contribute so much to incisional hernia from cutting of the tissues by sutures in the first four or five days after operation.

DR GEORGE A HENDON, Louisville, Ky. I set about trying to find a simple way to close incisional hernias and to eliminate mortality. I chose a method by which I could perform the operation without opening the peritoneal cavity unless there was a specific reason to do so. When this was done the opening was immediately closed. I proceeded on the basis, which is an essential and vital factor in all plastic surgery, of obtaining contact without tension. I also realize the importance of the principle in plastic surgery that, other things being equal, the chances of success are in proportion to the area of fresh surfaces that are brought into contact. Therefore, the problem is to increase the area of contact and reduce the degree of tension. For that purpose the superficial abdominal fascia around the hernia protrusion is exposed for at least an inch from the margin of the ring. A suture is started as far back as possible and is carried through the fascia to emerge about one-fourth inch from the margin of the ring. The needle is then made to jump over the hernia opening and is again started into the fascia about one-fourth inch from the margin of the ring and emerges from the fascia as far back as the exposure will allow. A mattress suture may be used if one wishes to do so. When the sutures thus introduced are tied, there is a shelf of tissue turned inside the abdomen which divides the tension and increases the area of surfaces in contact. Pressure on the shelf will push it against the inner surface of the abdomen and tend to strengthen the closure. One thus avoids the morbidity, shock and danger incident to the opening of the peritoneal cavity. There is no danger of including the intestine in the suture line, because it is pushed away when the peritoneal and transversalis fascia is turned in. I often use this method of closure in the primary operation.

MEDICINAL TREATMENT OF THE COMMON COLD

HAROLD S DIEHL, M.D.

MINNEAPOLIS

Although the public takes more medication for colds both on prescription and without prescription, than for the treatment of any other illness, little of real significance has been written concerning the treatment of colds. The Thomsons,¹ in their exhaustive review of over 2,000 papers on the common cold, devote only about five out of 700 pages to the subject of general medicinal treatment and then conclude concerning the various drugs which they mention that "no doubt all of these are of some value. Nevertheless, they frequently fail to produce the desired effect so that one cannot be by any means certain of their efficiency." In view of such knowledge, it seems like distinct temerity to suggest that certain well known drugs are of definite value in the treatment of colds, but this is what it seems one must conclude, tentatively at least, from the results of a controlled study of the treatment of colds which has been in progress for approximately a year at the Students' Health Service of the University of Minnesota.

Read before the Minnesota Society of Internal Medicine Nov. 13, 1933.

Supported by a grant from the Medical Research Funds of the University of Minnesota.

From the Students' Health Service and the Department of Preventive Medicine and Public Health of the University of Minnesota.

¹ Thomson David and Thomson Robert. *The Common Cold*. Annals of the Pickett Thomson Research Laboratory. London: Baillière Tindall & Cox and Baltimore: Williams and Wilkins Company, 1932.

The reason for inaugurating this study was the consistently good results I obtained in the treatment of my own colds with morphine.² A one-fourth grain (16 mg) tablet by mouth at bedtime on two consecutive nights was the usual dosage taken, although on several occasions complete relief followed a single dose. It was in order to determine whether similar results would occur in other persons that the study was undertaken.

EXPERIMENTAL PROCEDURE

The agency through which this study is being conducted is the dispensary of the Health Service of the University of Minnesota, to which students come for medical advice and treatment. The following bulletin to the physicians of the Health Service Staff will explain the procedure followed in the study.

A STUDY OF THE TREATMENT OF COLDS

As explained at the staff meeting on Nov. 2, 1932, it is proposed to determine the therapeutic value or lack of value of a certain drug which gives some indication of being useful for the treatment of acute head colds.

The plan to be followed is this: select for this study students who have acute coryza, preferably of one or two days' duration. Tell these students about the study and explain that we will be glad to give them the medication which we are trying if they will report what effects, if any they observe. Unless students are willing to report results, do not include them in this group.

The nose and throat of each student who is to receive this medication should be examined and notes made on the student's dispensary record as to symptoms, date of onset of cold, and objective findings. A prescription giving the student's name, address, and weight should then be written for "Cold Medication." The pharmacist will fill this prescription according to directions. With the medication the student will receive a card upon which to report results, but in addition to this report he should be requested to return to the Health Service in two or three days for another inspection of the nose and throat. At this time the examining physician's impression as to whether or not there has been improvement objectively should be recorded.

The instructions to the pharmacist were to fill these "cold prescriptions" alternately with cold medication A and cold medication B. Cold medication A consisted of morphine sulphate in the following dosage: weight less than 100 pounds, (45.5 Kg) $\frac{1}{8}$ grain (8 mg) at bedtime, weight 100 to 149 pounds (45.5 to 67.6 Kg) $\frac{1}{4}$ grain (10 mg) at bedtime, weight 150 pounds (68 Kg) or more, $\frac{1}{2}$ grain (16 mg) at bedtime. Cold medication B consisted of lactose tablets of the same size, shape and color as the morphine tablets. The directions issued with the lactose tablets were the same as with the morphine. Two tablets were given on each prescription with the following directions: "Take one tablet, and only one, with water before retiring. If symptoms of cold are present the following evening, take the second tablet. Do not give either of these to any one else." No instructions were given in regard to diet, rest, hot baths, gargles and the like. The box containing the tablets was enclosed in an envelop in which was printed the instructions given in figure 1.

DETERMINATION OF RESULTS

The card for reporting results which was filled out by the person who received the medication is shown in figure 2.

² Morphine was first used by the author to treat a cold merely as a substitute for powder of opium and opium (Dover's powder) but reference to prior use of this drug in colds is given by the Thomson who quite flatly states as follows: "The treatment I find most useful is a single dose of morphine gr. $\frac{1}{4}$ made up with a little cayenne and oil of menthol (a small dose of eucalyptus is also advantageous) in two hours 10 grains of a grain and a half bath. The following morning a gargle of 1 c of eucalyptus oil is given to clear away the irritant contents held back by the morphine."

When these report cards were returned they were checked for accuracy with the physician's notes on the dispensary record and classified as to type of cold and as to results of treatment. Classification as to type of cold was into one of the following groups: (1) acute coryza, i. e., colds of not more than four days' duration with serous discharge from the nose and with or without sore throat, headache, fever or other symptoms, (2) subacute or chronic head colds, i. e., colds with mucopurulent nasal discharge or with a serous discharge of more than four days' duration, (3) influenza.

COLD MEDICATION

You will find enclosed some medication for the treatment of your cold. Our experience indicates that certain prescriptions which we are using are beneficial to most people but we want to check this carefully and request that you assist us in so doing by reporting results critically favorable or unfavorable on the card which will be sent to you in a few days thru the University mail.

After filling in the card return it to the Health Service thru the University mail.

If you should fail to get relief by the time that you have taken all of this medicine please return to the Health Service for a different prescription. If relief is obtained with this medicine but symptoms recur return for a refill of the same prescription.

Fig. 1—Instructions to patients

i. e., acute infections of the upper respiratory tract characterized by headache, fever and general aching but without nasal discharge, (4) pharyngitis, i. e., a sore throat, with or without fever, headache, and the like but without nasal discharge, (5) other acute respiratory infections.

Any classification such as this based on symptoms is of course, subject to inaccuracies, for an acute respiratory infection may be a pharyngitis today and a rhinitis, laryngitis, tracheitis or bronchitis tomorrow. Furthermore, coryza is a frequent complication of various respiratory infections such as influenza and pharyngitis. This tends to make the acute coryza group somewhat heterogeneous, but since, as the report will show, the inclusion of cases that were primarily influenza or pharyngitis tends to diminish rather than increase the proportion of good results, the classification will serve reasonably satisfactorily for these purposes.

Name
Date of beginning of cold
Symptoms before taking medicine—watery discharge from nose— (check) sore throat—thick yellow discharge from nose —headache—fever—general aching Other
Date of first taking medicine— Condition next day (Note marked change)
Was medicine taken on this day?
Condition on following day
Impressions as to effectiveness of treatment, i. e., did this cold run its usual course? if not in what way was it different?

Fig. 2—Card for reporting results of medication

The cards reporting results were rated as indicating "definite improvement," "questionable improvement" or "no improvement." The ratings were made by me and independently by another physician without either of us knowing what medication had been given to the person making the report. Finally, the report from the pharmacist was obtained and the medication given to each patient was recorded.

These ratings, of course, represent merely the combined judgment of two physicians as to whether or not distinct improvement occurred immediately after treatment. No attempt was made to judge whether the

improvement, if any occurred, was the result of the medication, because the inclusion of a control group served to indicate how much improvement should be considered as due to spontaneous recovery. Some unselected examples of reports which were rated as showing "definite improvement," "questionable improvement" and "no improvement" are as follows:

DEFINITE IMPROVEMENT

- 1 First day "very little change" following day, 'much better'
- 2 First day, 'much improved', following day 'all symptoms relieved'
- 3 First day, improvement noticeable' following day, 'cold about gone'
- 4 First day, "better" following day 'cold much relieved and almost gone'
- 5 'Complete cure,' after first dose

QUESTIONABLE IMPROVEMENT

- 1 First day, cold was worse", second day, 'a little better. Comment: 'The cold seem to disappear in a day or two less than usual.'
- 2 First day, "no marked change" second day, slight improvement"
- 3 First day, "no marked change, headache gone" second day, a little better voice clearer
- 4 First day, 'general aching eliminated perceptibly' other symptoms continued"

NO IMPROVEMENT

- 1 First day 'no improvement" second day, usual improvement"
- 2 First day, no noticeable change throat still sore" second day, "about same as first day"
- 3 First day, no improvement" second day, no change cold ran usual course
- 4 First day, no better', second day, about the same

As will be seen from these illustrations, there could be no question about the ratings that should be given to most reports. A few, however, are borderline and probably would be rated differently by different individuals. This might make some difference in absolute percentages of favorable and unfavorable results but, since the ratings were given without knowledge as to the medications received, it is probable that the differences between the results with the various medications would remain practically the same no matter by whom the ratings were given.

In figure 3 it will be seen that the proportion of reports rated as "questionable improvement" tends to increase as the proportion rated 'definite improvement' decreases. This probably is due to the fact that some improvement usually occurs from day to day in the regular course of acute colds and, since many students had heard favorable reports of the treatment, there was a tendency for them to report the usual progress of the cold as "slight improvement." For this reason only reports rated as "definite improvement" are considered of much significance.

MEDICATIONS STUDIED

Although this study was instigated for the purpose of determining whether morphine is of value in the treatment of acute colds, the scope of the investigation was extended as soon as it became evident that this question could be answered in the affirmative. Codeine, papaverine, dilaudid (dihydromorphine hydrochloride) and powdered opium were tried in the hope that they might prove more beneficial and less toxic than morphine.

The combination of codeine and papaverine was introduced with the thought that the codeine and the papaverine might be effective in different individuals. Dilaudid and papaverine were combined on the suggestion of Dr. Raymond Bieter, associate professor of

TABLE 1—Medications Studied and Dosages Used for Persons Weighing 150 Pounds

Medication	Dosage	Directions
Morphine sulphate	$\frac{1}{4}$ grain tablets	1 at bedtime
Lactose	Small tablets	1 at bedtime
Codeine sulphate	1 grain tablets	1 at bedtime
Papaverine hydrochloride	$\frac{1}{2}$ grain capsules	1 in a.m. 1 in p.m.
Codeine papaverine (1)	$\frac{1}{4}$ grain codeine with $\frac{1}{4}$ grain papaverine	3 at bedtime 1 in a.m. 1 in p.m.
Codeine papaverine (2)	$\frac{1}{2}$ grain codeine with $\frac{1}{2}$ grain papaverine	3 at bedtime 1 in a.m. 1 in p.m.
Dilaudid (1)	$\frac{1}{16}$ grain capsules	2 at bedtime 1 in a.m. 1 in p.m.
Dilaudid (2)	$\frac{1}{16}$ grain capsules	4 at bedtime 1 in a.m. 1 in p.m.
Dilaudid (3)	$\frac{1}{16}$ grain capsules	2 at bedtime 1 in a.m. 1 in p.m.
Dilaudid (4)	$\frac{1}{100}$ grain capsules	3 at bedtime 1 in a.m. 1 in p.m.
Dilaudid papaverine (1)	$\frac{1}{16}$ grain dilaudid with $\frac{1}{4}$ grain papaverine	1 in a.m. 1 in p.m. 3 at bedtime
Dilaudid papaverine (2)	$\frac{1}{16}$ grain dilaudid with $\frac{1}{2}$ grain papaverine	1 in a.m. 1 in p.m. 2 at bedtime
Acetylsalicylic acid acetophenetidin caffeine	$\frac{1}{2}$ grains acetylsalicylic acid $\frac{1}{2}$ grains acetophenetidin $\frac{1}{2}$ grain caffeine	1 in a.m. 1 in p.m. 3 at bedtime
Powder of ipecac and opium (1)	$\frac{1}{2}$ grain capsules	1 in a.m. 1 in p.m. 1 at bedtime
Powder of ipecac and opium (2)	$\frac{1}{2}$ grain capsules	1 after lunch 3 at bedtime
Opium powder	$\frac{1}{2}$ grain capsules	1 after lunch 3 at bedtime
Sodium bicarbonate	10 grain capsules	3 after each meal 4 at bedtime
Acetylsalicylic acid	$\frac{1}{2}$ grain capsules	1 every 2 hours first day and three times a day thereafter
Morphine papaverine	$\frac{1}{16}$ grain morphine with $\frac{1}{4}$ grain papaverine	1 in a.m. 1 in p.m. 2 at bedtime

pharmacology that papaverine might reduce the toxicity of the dilaudid. Later, papaverine was used in combination with morphine for the same reason.

Several other drugs extensively used in the treatment of colds viz., powder of ipecac and opium, acetylsalicylic acid, sodium bicarbonate, and acetylsalicylic acid-acetphenetidin and caffeine were added to the list of medications studied in order that their effectiveness might be evaluated in relation both to the control tablet and to the other drugs used. A complete list of the drugs studied and the dosages used for persons of average size is given in table 1.

TABLE 2—Reports Not Returned and Reports Discarded

	Number Not Reporting	Percentages (Of Totals Not Who Received Medication)	Number Discarded	Percentages Discarded
Morphine	27	8.1	26	9.1
Lactose	24	12.3	17	9.5
Dilaudid	2	1.1	8	7.8
Codeine	1	0.2	9	7.3
Powder of ipecac and opium	1	1.2	5	6.1
Acetylsalicylic acid acetophenetidin caffeine	2	2.7	4	3.8
Opium powder	0	0.0	2	4.0
Dilaudid papaverine	1	1.0	4	4.2
Codeine papaverine	1	2.9	8	2.8
Sodium bicarbonate	2	3.3	1	1.7
Acetylsalicylic acid	6	10.0	1	1.5
Papaverine	1	7.1	0	0.0
Morphine papaverine	0	0.0	0	0.0
	96	1.9	86	3.8

Perhaps I should add that before any new drug combination was prescribed for students it was taken, in

larger dosage than was eventually used by me and frequently also by other members of the health service staff

REPORTS NOT RETURNED OR NOT RATED

Students who failed to report results within a week were sent follow-up notices with urgent requests for a report. As shown in table 2, a small percentage of students failed to respond even to these notices. Most

Constipation and diarrhea the frequency of which is indicated by the following percentages, were not considered as significant toxic symptoms. Constipation was reported after morphine by 26 per cent of the subjects, after codeine by 17 per cent, after opium powder by 46 per cent, after sodium bicarbonate by 42 per cent, after acetylsalicylic acid by 33 per cent, after dilaudid-papaverine by 21 per cent, after codeine-papaverine by 24 per cent, and after lactose by 12 per cent. Diarrhea was reported after morphine by 11 per cent, after opium powder by 23 per cent, after dilaudid-papaverine by 1 per cent, and after codeine by 17 per cent.

The frequency with which toxic effects were reported after the various drugs is shown in table 3. In considering this allowance must be made for the fact that some of these symptoms, such as those reported after lactose, were caused by the infection and not by the medications that had been taken.

RESULTS IN ACUTE CORYZA

As previously stated our so-called acute coryza group includes all persons who reported symptoms of a "watery discharge from the nose" and whose symptoms had not been present more than four days before treatment. Certainly most of the persons in this group had primary acute coryza, but in some cases the coryza was secondary to pharyngitis or influenza (grip). The results obtained with the different medications in this group of cases are shown in figure 3.

The percentages of individuals who reported definite improvement or complete cure of their colds within from twenty-four to forty-eight hours after taking morphine, dilaudid, codeine-papaverine, dilaudid-papaverine and morphine-papaverine are essentially the same, the differences in percentages of good results

TABLE 3—Toxic Symptoms Reported

	Percentage Reporting*						
	Total Re-ports Re-ceived	Nausea With Vom iting	Faint-ness or Faint-ness	Severe Head-ache	Drowsy or Feeb-ly	Percentage of Total or Report-ing symp-toms	
Dilaudid dosages 1 2 3	99	4.0	9.1	0.0	1.0	11	11
Morphine	270	2.6	7.7	1.4	0.4	11	9.4
Codeine	118	0.0	2.1	1.7	2	17	0.7
Opium powder	4	0	2	2.1	0.0	0	0.7
Powder of Ipecac and opium	78	2	1.1	0.0	1	0.0	5.1
Acetylsalicylic acid	60	0.0	0.0	0.0	0.0	3	2.3
Papaverine	6	0.0	1	0.0	1.5	0.0	1.1
Dilaudid-papaverine	97	0.0	1.0	0.0	0.0	2.1	1.1
Codeine-papaverine	288	0.0	0.7	0.0	0	1.4	1
Morphine-papaverine	0	0.0	0.0	0.0	0.0	2.9	2.9
Sodium bicarbonate	3	0.0	1	0.0	0.0	0.0	1
Lactose	178	0.0	0.0	0.0	0.0	0.0	1.7
Acetyl salicylic acid acet-phenethidin caffeine	65	0.0	1.5	0.0	0.0	0.0	1

* Only the one symptom which seemed most out of control, in each case, was tabulated.

† In making up the totals constipation and diarrhea were not considered as toxic symptoms.

being without significance.^{2a} Codeine-papaverine, dilaudid-papaverine and apparently morphine-papaverine, however, are preferable to morphine or dilaudid alone because of their being distinctly less toxic (table 3).

^{2a} Some of the improvement after each of the medications is of course temporary and is the result of the treatment.

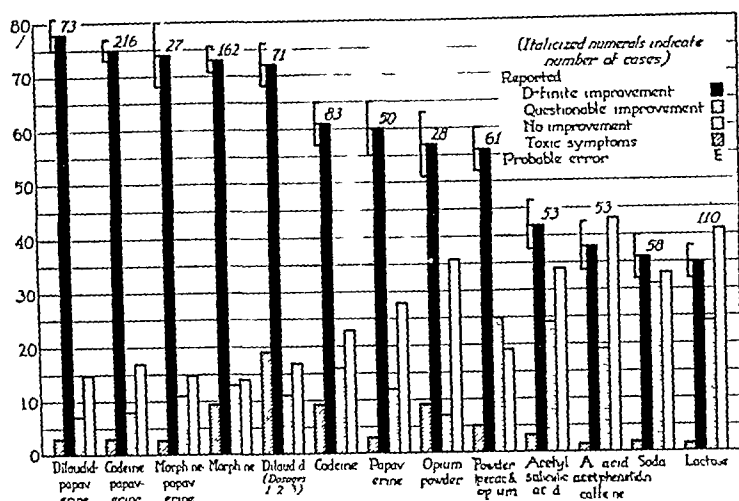


Fig. 3—Various drugs in the treatment of acute coryza

of the failures, however, occurred early in the study or during examination or vacation periods.

Of the reports received, eighty-six were discarded without ratings because of one of the following shortcomings. The medication had not been taken in accordance with directions, the medication was discontinued because of toxicity, the statements on the report card were too ambiguous for classification, or the infection was in the lower rather than in the upper respiratory tract. Table 2 shows the numbers and percentages of reports discarded.

The relatively large proportion of reports discarded from persons who had received the morphine and lactose tablets is due to the fact that at the beginning of the experiment only one dose of the drug was given with instructions to return the following day to report results and to receive a second dose. However, because of the considerable proportion of patients who failed to return for the second dose, this plan was soon replaced in favor of the one that has been described. It will be noted also that the proportion of unsatisfactory reports is higher for the drugs which proved to be most toxic.

Although it would have been highly desirable to have all reports returned and rated, it is unlikely in view of the distribution of the missing and discarded reports that the results would have been much different had this been possible.

TOXIC EFFECTS OF THE DRUGS USED

A record was kept of all students who reported symptoms which they considered toxic effects of the drugs they had taken. The most common of these symptoms were nausea, vomiting, dizziness, 'dopey feeling', and faintness or actual fainting. Fainting was reported to have occurred most frequently on rising in the morning after having taken the medicine the night before.

Codeine-Papaverine³—One hundred and sixty-one of the 216 individuals, 75 per cent, who took the codeine-papaverine combination for acute coryza, reported definite improvement or complete cure in from twenty-four to forty-eight hours. This is 14 per cent more than reported similar results from codeine alone, and 19 per cent more than from papaverine alone. With such differences, the odds are 45 to 1 that the codeine-papaverine combination is more beneficial than codeine alone, and 79 to 1 that the same combination is more beneficial than papaverine alone.⁴ Codeine and papaverine were tried together in several proportions and dosages, the chief of which are shown in table 1 as dosages 1 and 2. The difference in the percentages of good results with these two dosages, however, 74 and 76 per cent, respectively, is not sufficiently great to be of significance. Hence the smaller dosage $\frac{1}{4}$ grain of codeine with $\frac{1}{4}$ grain of papaverine, is now in use. The specific directions given with this codeine-papaverine combination to persons of various weights are as follows:

75 to 99 pounds 1 after breakfast, 2 at bedtime
 100 to 129 pounds 1 after breakfast, 3 at bedtime
 130 to 169 pounds 1 after breakfast, 1 after lunch 3 at bedtime
 170 pounds and over 1 after each meal and depending on weight, 3 or 4 at bedtime

The change most frequently observed by persons who reported improvement was a prompt decrease or a complete disappearance of the nasal discharge and congestion. In many cases relief of the coryza was permanent following the first dose of the medicine, and even when there was a recurrence of congestion or discharge between doses the relief that followed the medication lasted for several hours. Furthermore, although the excessive secretion was controlled, the unpleasant dryness that usually occurs when atropine is taken for this purpose was not experienced. The pharyngitis, laryngitis and tracheitis that occur with certain colds were not materially affected by the medication. The relief of the coryza, however, very definitely reduced the discomfort and incapacity and in most cases seemed practically to eliminate the protracted period of mucopurulent discharge. This was particularly noticeable when the medication was taken at the very beginning of symptoms.

Unpleasant symptoms, such as nausea, dizziness, headache and fainting, were infrequent following the codeine-papaverine combination (table 3).

When one is prescribing derivatives of opium, a question as to the danger of habituation naturally arises. Concerning addiction to papaverine, New and Non-official Remedies⁵ says that "its toxicity is low, and neither tolerance nor habituation has been reported." Addiction to codeine may occur, but it is so rare that Wolff⁶ states that "codeine is not practically dangerous from the point of view of habituation and, like papav-

erine, does not come under the German opium law." Furthermore, the use of these drugs for the treatment of colds is occasional and for only short periods of time. Hence it would seem that one need have no concern in regard to habituation when using this drug combination for the treatment of acute colds.

Dilaudid-Papaverine—The results obtained with dilaudid-papaverine were practically identical with those reported for codeine-papaverine, the differences that appear in figure 1 being too small to be of significance. In at least two cases, however, dilaudid-papaverine gave prompt and permanent relief after the codeine-papaverine combination had produced only temporary improvement. Whether or not one of these combinations will tend to be effective in any considerable number of cases when the other is ineffective is being investigated. The proportion of patients who reported "definite improvement" after the dosages of dilaudid-papaverine (shown in table 1) were 77 and 80 per cent, respectively, a difference not sufficiently great to be significant. The specific directions given to the several weight groups for the use of the dilaudid-papaverine combination are the same as for the use of the codeine-papaverine combination.

The proportion of patients who reported toxic results after dilaudid-papaverine was approximately the same as after codeine-papaverine. The total incidence of toxic symptoms after dilaudid-papaverine, however, was only about one sixth as great as after dilaudid alone. These results, as well as those with the codeine-papaverine and morphine-papaverine combinations strongly suggest that papaverine may be effective in reducing the toxicity of morphine, codeine and dilaudid. The danger of habituation from the dilaudid-papaverine combination in the dosage used is certainly negligible if not absolutely nil.

Morphine-Papaverine—The number of cases treated with this combination is too small to justify generalizations, but since the results with it are no better than with codeine-papaverine or dilaudid-papaverine, there does not seem to be any reason for continuing its use. The toxic effects from the morphine-papaverine combination appear to be distinctly less than those from morphine alone.

Morphine—This drug, with which our study was started, is apparently of definite value in the treatment of acute coryza. However, the larger proportion of toxic results after it and the hesitancy of physicians to prescribe morphine because of the danger of addiction make it less desirable for extensive use than the several combinations already discussed.

Dilaudid (dihydromorphinone hydrochloride)—Beneficial results with dilaudid alone, in the larger dosages used, were approximately as frequent as with the other effective drugs or drug combinations, the proportions of "definite improvement" reported after dosages 1, 2, 3 and 4 (table 1) being 76, 69, 65 and 47 per cent, respectively. However, the large proportion of unpleasant effects after dilaudid (table 3) caused its discontinuance in favor of the less toxic combination of dilaudid with papaverine.

Concerning the dangers of habituation to dilaudid, Wolff⁶ says that "it has been shown both experimentally and clinically that it leads more slowly to habituation and addiction than morphine and its devotees are therefore more easily cured."

3 A patent application has been filed to enable the University of Minnesota to control the preparation and sale of the new drug combinations indicated by this study to be of value in the treatment of the common cold. Specifically these combinations are codeine with papaverine, dilaudid with papaverine and morphine with papaverine. It is not intended, however, that this patent shall interfere with the use of these drugs in the compounding of prescriptions written by physicians for their patients.

4 Pearl Raymond, Medical Biometry and Statistics. Philadelphia: W. B. Saunders Company, 1933.

5 New and Nonofficial Remedies. Chicago: American Medical Association, 1933, p. 307.

6 Wolff, Paul. Drug Addiction: A World Wide Problem. J. A. M. A. 98: 2175 (June) 1932.

Codeine—Codeine is evidently of definite though less value than morphine in the treatment of acute coryza. Toxic effects after codeine were just as frequent as after morphine.

Papaverine—Papaverine, which seems to be practically nontoxic, gives approximately the same proportion of good results as codeine (57 per cent of fifty-two cases and 61 per cent of eighty-three cases, respectively).

Powder of Ipecac and Opium—This powder, consisting of 10 per cent powdered opium and 10 per cent powdered ipecac, seems to have been first proposed for the treatment of colds by Dover, an English physician, in the seventeenth century. For many years it was extensively used, but pharmacists state that recently it has been almost completely replaced by the more actively promoted antipyretics, alkalis and the like. However, Cecil,⁸ in his book on colds, recommends powder of ipecac and opium as the medication of choice in the general treatment of colds.

The dosage in which powder of ipecac and opium was first used in this study was that ordinarily prescribed by physicians (dosage 1, table 1). Later the dosage was increased (dosage 2, table 1), so that the amount of available morphine which it contained was approximately the same as the amount of morphine that was being prescribed when morphine was given alone. With the larger dosage, however, there was no significant improvement in results, "definite improvement" being reported after dosages 1 and 2 by 54 and 58 per cent of cases, respectively.

The results (figure 3) with this time-honored remedy indicate that it has real merit. However, since powdered opium alone gives as good results as the powder of ipecac and opium, it would seem that its value lies in the ability of the opium to relieve the nasal congestion and secretion and not, as commonly supposed, in the stimulation of secretions and sweating produced by the combination of the opium and ipecac.

A few individuals reported nausea and vomiting following the powder of ipecac and opium but the percentage of these was small.

Opium Powder—Powdered opium was tried in order to compare the results with it to those obtained with morphine and with powder of ipecac and opium. The dosage of opium used was such that it contained approximately the same amount of available morphine as that administered when morphine was used alone. This also was the same amount of opium as was contained in the larger dosage of powder of ipecac and opium.

The percentage of persons reporting "definite improvement" with the powdered opium was less than with morphine, but the same as with powder of ipecac and opium (fig. 3). Why opium should be less beneficial than morphine or morphine-papaverine or codeine-papaverine is not clear, although it is possible that smaller proportions of these alkaloids are absorbed when opium is used than when the alkaloids are taken separately.

The proportion of toxic symptoms from the opium was the same as from morphine or codeine but greater than from the codeine-papaverine combination. The possibilities of addiction to opium are too well understood to need comment but certainly there is no danger

of developing habituation when the drug is used as it was in this study.

Lactose—It seemed essential at the beginning of this study to have reports from a series of patients who thought they were taking some presumably effective medication but who in reality received no medication whatever. For this purpose tablets and capsules of lactose were employed. The proportion of good results (35 per cent) reported after lactose is indicative of the spontaneous improvement in acute colds for which any medication that happens to be taken is given credit. It is because this percentage is so large that it is possible to convince the public that practically any preparation is of value for the prevention or treatment of colds. In fact, some of the comments that were made on the report cards by persons who had received only lactose tablets would serve admirably as testimonials concerning the value of these tablets for the treatment of colds.

It would have been desirable, of course, to continue this control group throughout the year, but after reports

UNIVERSITY OF MINNESOTA—STUDENTS HEALTH SERVICE	
Name _____	
Will you be good enough to answer a few more questions in order to help us to determine the value of the medication which you received for a cold on _____? These questions are	
1 How many days or half days were you absent from classes or work because of this cold?	
(a) before treatment _____ days	(b) after treatment _____ days
2 Did you stay in any other time over a week end or holiday because of this cold?	
(a) before treatment _____ days	(b) after treatment _____ days
3 What was the approximate total duration of this cold?	
_____ days	
4 Did you observe any unpleasant effects which seemed to be due to the medication such as diarrhea constipation etc? If so what?	

After filling in the answers to the above questions please drop this card in the University mail.	
If you received treatments for colds other than the one noted above additional cards will be sent you.	
H. S. DIEHL, M.D. Director	

Fig. 4—Follow up report on results of treatment

from a hundred patients had been received we did not feel justified in continuing it further.

Acetylsalicylic Acid-Acetphenetidin-Caffeine—The proportion of persons (37 per cent) who reported beneficial results from this drug combination is not significantly greater than that reporting benefit from the sugar capsule. A few stated that headache was relieved but that other symptoms continued unchanged. The majority, however, seemed to get no benefit whatever.

Acetylsalicylic Acid—Because acetylsalicylic acid is so widely used in the treatment of colds, it was tried alone. The proportion of good results (42 per cent), however, was not significantly greater than that with the sugar capsule.

Sodium Bicarbonate—During the past few years the so-called alkalinization treatment of colds, by means of sodium bicarbonate, other mild alkalis or citrus fruits, has been much advocated. Some of this has been based on medical writings,⁹ but most of it on the promotion of medicinal preparations or citrus fruits by advertisers.

In our study sodium bicarbonate in dosages of 130 grains (8.5 Gm.) a day for the adult of average size was used (table 1). This amount was believed suffi-

⁹ Cheney, A. S. The Common Cold. Etiology, Prevention and Treatment. Am. J. Pub. Health 18: 1570 (Jan.) 1929.

⁸ Steadman, T. L. Medical Dictionary. New York: William Wood & Co., 1925.

⁹ Cecil, R. L. Cold. Caring Treatment and Prevention. New York: D. Appleton & Co., 1922.

cient to produce at least as much "alkalization" as is usually obtained with this treatment. The results, as shown in figure 3, are approximately the same as those reported after acetylsalicylic acid, the acetylsalicylic acid-acetphenetidin-caffeine combination, and lactose. In other words, this study gives no evidence that alkalinization is of value in the treatment of the common cold.

TABLE 4—Duration of and Time Lost on Account of Acute Colds

Medication	Number of Cases	Average Time Lost After Treatment, Days		Percentages Who Lost No Time		Average Duration of Symptoms, Days	
		From School or Work	Usual Activities Total	From School or Work	Usual Activities	Before Treatment	After Treatment
Codeine papaverine	129	0.2	0.5	87.1	78.0	2.8	4.3
Dilaudid papaverine	42	0.3	0.7	83.3	80.5	2.6	2.8
Papaverine	29	0.3	0.4	79.3	62.1	2.8	6.2
Acetylsalicylic acid	20	0.3*	0.6*	83.3	66.7*	2.6*	3.5*
Morphine	85	0.3	0.7	80.0	64.2	2.4	4.0
Codeine	62	0.4	0.7	72.7	59.3	2.7	5.4
Powder of Ipecac and opium	42	0.4	0.8	79.5	61.4	2.9	8.4
Morphine papaverine	11	0.5*	0.6*	63.7*	63.7*	2.3*	4.3*
Sodium bicarbonate	27	0.5	0.9	72.0	68.0	2.9	5.3
Opium powder	16	0.5	0.9*	50.0*	31.3	2.7*	4.1
Lactose	61	0.6	1.2	72.6	61.9	2.6	6.7
Acetylsalicylic acid acetphenetidin caffeine	36	0.6	1.0	73.0	51.4	2.8	4.6
Dilaudid (dosages 1 and 2 and 3)	42	0.8	1.1	64.3	41.2	2.9	4.4

* Based on less than twenty-five cases; hence unreliable.

VARIATION IN RESULTS THROUGHOUT THE YEAR

Since no single medication was used continuously, it is impossible to speak with certainty of variation in results throughout the year. However, the results suggest that colds tend to become more severe as the winter progresses. This may be due to an increase in the virulence of the infections or, what is more likely, to a decrease in resistance of the victims.

TABLE 5—Results in Subacute and Chronic Colds

Medication	Total Cases	Percentages Reporting		
		Definite Improvement	Questionable Improvement	No Improvement
Codeine papaverine	47	36	21	39
Dilaudid papaverine	13	31	21	48
Morphine papaverine	8	25	13	62
Morphine	50	48	24	28
Dilaudid	15	47	26	27
Codeine	21	43	33	24
Papaverine	13	38	31	31
Opium powder	10	50	10	40
Powder of Ipecac and opium	5	20	12	68
Sodium bicarbonate	8	63	12	25
Acetylsalicylic acid acetphenetidin caffeine	10	30	30	40
Acetylsalicylic acid	11	36	27	36
Lactose	48	35	31	34

* Most of the percentages in this table are subject to considerable variability because of the small number of cases on which they are based.

A marked decrease in the proportion of reports of "definite improvement" in May with all medications was coincident with, if not actually due to, the prevalence among the student body of a severe infection of the upper respiratory tract characterized primarily by an acute pharyngitis. Many of these patients developed coryza and so were classified in the acute coryza group.

In December there was an epidemic of mild influenza, or grip, among the students. Some of these patients

developed coryza and so were given the "cold medications" in use at that time. One of these was the control tablet, and since most of these infections were very mild and of short duration, the proportion of persons reporting definite improvement following the lactose tended to increase during this period.

INFLUENCE OF TREATMENT ON TIME LOST AND ON TOTAL DURATION OF ACUTE COLDS

After this experiment had been in progress about a month, it was decided to check the results by comparing the amount of time lost and the total duration of colds following the various medications. Information relative to this was obtained from a card (fig. 4) which was sent to university students three weeks after treatment.

As may be seen by comparing totals in figure 3 and table 4, these reports of time lost were not received from nearly all the persons treated. For this there are several obvious reasons: viz., the loss of interest on the part of students because of the long interval of time between treatment and the request for this report, the occurrence of vacation periods at the time this report was due, a lack of follow up if the first card was not returned, and the sending of these cards only to certain students in order that all reports would be from individuals under similar regulations in regard to absence from class.

TABLE 6—Results in Influenza

Medication (4)	Total Cases	Percentage Reporting		
		Definite Improvement	Questionable Improvement	No Improvement
Acetphenetidin	31	48	20	22
Morphine acetphenetidin	37	42	29	29

The considerable proportion of these reports which are lacking introduces such a large element of possible error that the validity of results indicated by the tabulation is questionable. On the other hand, there is no reason to think that the comparative results with the different medications are not of some significance.

In table 4 are presented the average amounts of time lost from usual activities by patients who received the various medications; the proportion of each group who lost no time, and the average duration of symptoms before and after treatment. From this tabulation it appears that the loss of time by persons who received the medications indicated by figure 3 to be most beneficial and least toxic is significantly less than by those who received the least effective group of drugs.¹⁰ For example, the average amount of time lost from school or work by students who took codeine-papaverine (0.23 day) or dilaudid-papaverine (0.25 day), was approximately half as great as the amount of time lost by those who took sodium bicarbonate, lactose or the acetylsalicylic acid-acetphenetidin-caffeine combination, 0.52, 0.61 and 0.65 day, respectively. The total amount of time after treatment lost from all usual activities is in approximately the same ratio: viz., one-half day after codeine-papaverine or dilaudid-papaverine as compared to from one to one and a half days after sodium bicarbonate, lactose and the acetylsalicylic acid-acetphenetidin-caffeine combination.

10 The only exception to this is acetylsalicylic acid; the loss of time after which is only about half as great as after lactose or the acetylsalicylic acid acetphenetidin caffeine combination, which according to other reports are of as much value as acetylsalicylic acid. Hence this difference is doubtless without significance and due to the small number of cases.

The figures in regard to the total duration of the colds are of less significance because it is difficult to determine the exact date of termination of a cold. In general, however, these average durations tend to show differences between the medications similar to those suggested by the amounts of time lost.

RESULTS IN SUBACUTE OR CHRONIC COLDS

The group of subacute or chronic colds consists for the most part of individuals with colds of more than four days' duration at the time of treatment, although cases of shorter duration were included if a "thick yellow nasal discharge" was reported. The results of treatment in these subacute or chronic colds (table 5) give no indication that any of the medications used are beneficial. The actual percentages rated "improvement" show considerable variability, but in view of the small numbers of cases on which these are based the differences are without significance.

RESULTS IN INFLUENZA

The effect of morphine in mild influenza without coryza was tested both in ambulatory and in bed patients. The ambulatory patients alternately received acetphenetidin and acetphenetidin plus morphine in the dosages shown in table 1. All the bed patients received the acetylsalicylic acid-acetphenetidin-caffeine combination, but in addition every second patient was also given morphine in the dosage previously indicated.

As to the proportion of influenza patients in whom coryza developed and who consequently were included in our acute coryza group we have no information, but Doull and Bahlke¹¹ report that in an influenza epidemic among the resident nurses of Johns Hopkins Hospital, in the winter of 1928-1929 51 per cent of the patients exhibited coryza as a "first day" symptom. In connection with the study here reported, several members of the health service staff who had influenza with symptoms of coryza and who took morphine reported relief from the symptoms of coryza but no other effect on the course of the infection.

The summary of the reports from the ambulatory patients appears in table 6. Results in the hospitalized patients were estimated by comparing the average number of days that the two groups were confined to bed. These were 2.6 days for twenty-four patients who had received the usual treatment and 2.4 days for sixteen patients who in addition had received the morphine. None of these results suggest any value for morphine in the treatment of influenza without coryza.

RESULTS IN PHARYNGITIS

The cases of pharyngitis are too few to justify conclusions but the results do not suggest any value for the codeine-papaverine combination in this condition.

COMMENT

It seems quite definite from the results of this study that opium and the major alkaloids derived from it are of distinct value in the treatment of acute coryza. The chief result observed is a marked decrease or complete disappearance of the nasal congestion and discharge. This effect occurs promptly and is usually prolonged or permanent. Rest or sweating is not a factor although it is reasonable to suppose that secondary infections are less likely to develop if general hygienic measures are followed.

The failure to get good results with any of the medications in cases of influenza and pharyngitis suggests that the variability in results throughout the year may be due, in part at least, to differences in the types of infections causing the coryza. The absence of good results in subacute and chronic colds seems to indicate that beneficial results can be expected only before secondary infections have set in.

SUMMARY OF RESULTS

1 This study shows the relative values of various drugs and drug combinations in the treatment of 1,039 cases of acute coryza, 262 cases of subacute or chronic colds, 114 cases of influenza and 53 cases of acute pharyngitis.

2 Of the drugs studied, only opium and certain alkaloids derived from it seem to be of value in the treatment of acute coryza.

3 Combinations of papaverine with codeine, papaverine with dilaudid, and papaverine with morphine were followed by "definite improvement" in from 74 to 78 per cent of the cases and in the dosages used these combinations seem to be practically nontoxic.¹²

4 For general use a combination of codeine and papaverine seems most desirable because of the high per centage of good results obtained with it, its low toxicity, and the absence of danger, or at least of "practical danger" of habituation to it.

5 Morphine and dilaudid (dihydromorphinone hydrochloride) alone were followed by "definite improvement" in nearly as large a proportion of cases (73 and 72 per cent, respectively) but each was distinctly more toxic alone than when combined with papaverine.

6 Codeine, papaverine, powdered opium and powder of ipecac and opium were followed by "definite improvement" in from 56 to 61 per cent of cases. The toxicity of these drugs is in the following order: codeine, powdered opium, powder of ipecac and opium and papaverine, with codeine practically as toxic as morphine.

7 Powder of ipecac and opium although of value in the treatment of acute colds, is no more beneficial than the same amount of powdered opium without the ipecac.

8 Sodium bicarbonate, acetylsalicylic acid and a combination of acetylsalicylic acid-acetphenetidin-caffeine give little if any better results in the treatment of acute coryza than the lactose tablet used as a control, each being followed by "definite improvement" in from 35 to 42 per cent of cases.

9 A computation based on incomplete reports of time lost from their usual activities by patients who received the various medications suggests that it may be possible with the codeine-papaverine or dilaudid-papaverine combinations to reduce very materially the amount of time lost as a result of acute colds.

10 None of the medications studied seem to be of benefit in subacute or chronic colds.

11 Morphine was tried in influenza but was of no value.

12 The number of cases of pharyngitis treated were too few to justify conclusions but none of the drugs seemed of value.

Students' Hospital and Dispensary

11. Doull, J. A., and P. H. Bahlke. Anna M., Epidemic Influenza. A Comparison of Clinical Outcomes in a Major and Minor Epidemic. Am. J. Hyg. 31: 57 (May 1915).

12. Further experience since the publication of this paper with the dilaudid-papaverine combination shows it to be more toxic and of no greater benefit than the codeine-papaverine combination.

Clinical Notes, Suggestions and New Instruments

VINCENT'S INFECTION WITH REPORT OF A CASE

WILLIAM THOMAS WILKINS JR M D PIQUA OHIO

For several months before the onset of a severe illness, a white man, aged 36, had recurring single canker sores on the tongue which would last a day or two and disappear without treatment. He was a man of cleanly oral habits, and dentists had repeatedly assured him that there were no pockets or ulcerated areas on his gums. A small canker was present in the mouth when the lower lip became chapped and cracked while the patient was on a fishing excursion. The ulcer of the tongue disappeared but the crack became deeper and quite tender. After a few days this soreness subsided.

About two days later, however, the lip again became sore and the region of the submaxillary glands was tender on chewing and on pressure. For the next five days the lip became increasingly tender, the crack became deeper and the adjacent mucous membrane took on a whitish cast. It felt thick to the tongue. The lips felt dry and parched. The interior of the mouth and the tongue felt hot and there was a suggestion of a metallic taste, but nothing abnormal could be seen in the mouth except that the upper surface of the tongue was possibly slightly more pink than usual. The submaxillary glands on both sides were now easily palpable and quite tender.

Fever in mild degree during the preceding few days was suddenly precipitated by a chill and the patient went to bed. Physical examination at this time revealed nothing more than has been described. The gums seemed entirely normal. The tonsils were out. The pharynx and nares were normal. The temperature was 102 F pulse 95, respiration 20. The chest, heart, abdomen, skin and extremities were normal. There was no lymphadenopathy beyond that in the neck. The patient was more toxic than his vital signs would indicate.

During the four days that followed the patient's going to bed the temperature varied between 100 and 102. Several other chills occurred. Toxicemia increased. A gnawing burning sensation in the epigastrium was accompanied by anorexia and all foods taken into the stomach produced severe cramps. The epigastric region was tender to pressure and distended with gas. On swallowing, a sharp pain occurred deep in the chest in the sternal area. Here also a sensation of soreness and of great distress was constantly present. Two new canker sores appeared on the edge of the tongue. Smears taken from these and the lip and gums showed only an occasional spirillum as might be expected in a normal mouth. Blood cultures, blood agglutinations for tularemia, undulant fever and typhoid and urinalyses were negative. The blood count was 7500 white cells with 65 per cent polymorphonuclears the day the patient went to bed. Two days later it was 8,500, and a week later 10,200.

For want of better treatment, 0.5 Gm of neoarsphenamine was administered. Twenty-four hours later, as if by explosion the gum surface of the entire mouth became swollen, red, boggy and very sore. Bleeding ensued. Smears were filled with Vincent's organisms, both spirilla and fusiform bacilli. The stomach pain, chest soreness and tongue ulcers were suddenly worse. Next day (forty-eight hours after the arsenical medication), all these symptoms were noticeably improved.

During the following two weeks a low grade fever continued. The swelling and ulcerations of the tongue and gums disappeared. Chest pain and gastric distress disappeared in three or four days after the first dose of neoarsphenamine.

The patient received three doses of neoarsphenamine intravenously and four doses of a bismuth compound intramuscularly, equivalent to 0.4 Gm of neoarsphenamine and 25 mg of metallic bismuth per dose during this period of two weeks. Mouth washes of strong sodium perborate solution and diluted hydrogen dioxide were given. The gums were painted two or three times daily with arsphenamine or bismuth solutions. Mouth washes had been carried out for some time before the patient went to bed and continuously afterward, but as far as could be noted from the course of the illness no benefit was derived from them.

Following each intravenous injection of neoarsphenamine the patient became nauseated and dizzy and had various hyperesthesias and visual disturbances. These symptoms seemed to be due to an idiosyncrasy to arsenic, for they appeared and disappeared regularly with the administration of the drug. Exacerbation of the symptoms and signs of the disease itself occurred only after the initial dose.

To summarize the course of the disease after the first injection of neoarsphenamine, the buccal, esophageal and stomach symptoms disappeared in four days, the lip was well in ten days, the glands lost their soreness in 25 days and were not palpable in ten days, the gums looked normal in two weeks. The patient lost 14 pounds (6.4 Kg) during his confinement of three weeks. Smears taken from the mouth eight days after the first dose of neoarsphenamine showed only an occasional spirillum and were negative in three weeks.

Orr-Flesh Building

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

ANTIPNEUMOCOCCUS SERUM (See New and Nonofficial Remedies 1933, p 369 and THE JOURNAL, Dec 16 1933, p 1968)

E R Squibb & Sons, New York

Concentrated Anti Pneumococcus Serum Types I and II—Prepared by immunizing horses with intravenous injections of cultures of type I and type II pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency for types I and II pneumococci the horses are bled aseptically and the serum is refined and concentrated by the method described by Lloyd D Felton (*J Infect Dis* December 1928 p 543). The usual sterility and safety tests are made by injection into white mice and guinea pigs. The potency of the product is expressed in terms of the unit described by Felton (*Boston M & S J* May 15 1924 p 819 *J Infect Dis* September 1925 p 199 October 1925 p 309) and used by Park. While the unit originally was intended to be the amount of antibody that will protect against one million fatal doses of culture it has lately been taken to be 1/200 cc of the control serum (F 146) distributed by Dr Felton. Marketed in packages of one syringe containing 10 000 units each of types I and II.

Dosage—Intravenously first dose 10 000 units of each type followed by a second dose of 20 000 units of each type in one hour the second dose may be repeated at intervals of from four to six hours until the temperature falls and beneficial effects are evident.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

PAUL NICHOLAS LEECH Secretary

AMPULES SODIUM CACODYLATE 7½ GRAINS (0.5 GM), 5 CC (FOR INTRAVENOUS USE) AND AMPULES SODIUM CACODYLATE 15½ GRAINS (1.0 GM), 10 CC FOR INTRAVENOUS USE (CHEPLIN BIOLOGICAL LABORATORIES) NOT ACCEPTABLE FOR N N R

The Cheplin Biological Laboratories presented these ampules of sodium cacodylate (among others) for consideration as to inclusion in New and Nonofficial Remedies. In a submitted circular, these particular ampules are stated to be for intravenous use. The Council holds that the desired effects of sodium cacodylate may be achieved by oral administration of the drug or in exceptional cases that the intramuscular route may be desirable. The Council recently omitted from New and Nonofficial Remedies ampules of sodium cacodylate labeled "for intravenous administration" even though the manufacturer made no propaganda for such use in the advertising for the product (THE JOURNAL, May 7 1932, p 1654). The Council was therefore obliged to hold Ampules Sodium Cacodylate 7½ grains (0.5 Gm) 5 cc, and Ampules Sodium Cacodylate 15½ grains (1.0 Gm) 10 cc (Cheplin Biological Laboratories), both designed for intravenous use unacceptable for inclusion in New and Nonofficial Remedies.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

CEMAC

A FOOD FREE FROM CEREAL, EGG AND MILK
FOR ALLERGIC CHILDREN

Manufacturer—Mead Johnson and Company, Evansville, Ind

Description—Cooked mixture of cauliflower tomatoes, beef carrots, spinach, olive oil sucrose 'Dextri-Maltose' (essentially a mixture of maltose and dextrans), gelatin, dicalcium acid phosphate, cod liver oil and sodium acid phosphate prepared by efficient method for retention in high degree of the natural mineral and vitamin values

Manufacture—Government inspected beef is ground and mixed with cleaned and chopped cauliflower, tomatoes, carrots and spinach, in a double jacketed, closed type steam kettle water is added the kettle is closed the air is pumped out, and steam is introduced into the outside jacket. The method of cooking minimizes vitamin loss through oxidation. The mixture is strained, admixed with the other ingredients, homogenized filled into tins, hermetically sealed, and processed under 15 pounds steam pressure for forty-five minutes

Analysis (submitted by manufacturer) —

	per cent
Moisture	74.8
Ash	1.4
Fat (ether extract)	6.4
Protein (N X 6.25)	6.2
Crude fiber	0.3
Carbohydrates (by difference)	10.9
Calcium (Ca)	0.22
Phosphorus (P)	0.30
Magnesium (Mg)	0.02
Sodium (Na)	0.30
Potassium (K)	0.28
Chlorine (Cl)	0.04
Sulphur (S)	0.06
Iron (Fe)	0.008
Copper (Cu)	0.0015
Fin	0.0

Calories—1.3 per gram 37 per ounce

Claims of Manufacturer—A food free from cereal, egg and milk for children allergic to the proteins of these foods. Designed to supply all the nutritive requirements for normal growth

FAIRWAY WHITE LABEL BRAND MIXED VEGETABLES

Distributor—Twin City Wholesale Grocer Company St Paul and Minneapolis

Packer—The Larsen Company Green Bay, Wis

Description—Mixture of carrots, potatoes, celery, green beans cabbage peas corn lima beans onions sweet peppers salt and water prepared by efficient methods for retention in high degree of the natural mineral and vitamin values the same as the accepted Larsen's Veg Mix (THE JOURNAL Aug 12 1933 p 525)

PLIFZING UNSWEETENED STERILIZED EVAPORATED MILK

Distributor—Plee Zing Inc Chicago

Packer—Pace Milk Company Merrill Wis

Description—Canned unsweetened evaporated milk the same as Pace Evaporated Milk Sterilized Unsweetened (THE JOURNAL May 20 1931 p 1872)

CASEC (CALCIUM CASEINATE)

Manufacturer—Mead Johnson and Company, Evansville Ind

Description—Powdered calcium caseinate, readily miscible with water, forming a turbid suspension

Manufacture—Skim milk is acidified with acetic acid to precipitate the curd, the whey is removed by decantation. The curd is washed free of whey salts, lactose, lactalbumin and acid, and is heated with a slight excess of precipitated calcium carbonate until the curd dissolves with the formation of calcium caseinate. The excess of calcium carbonate is removed by centrifugation. The calcium caseinate is dried in vacuum, powdered and packed in hermetically sealed tins in an atmosphere of nitrogen

Analysis (submitted by manufacturer) —

	per cent
Moisture	5.5
Ash	4.5
Fat (ether extract)	2.0
Protein (N X 6.38)	88.0
Crude fiber	0.0
Carbohydrates (by difference)	0.0
Calcium (Ca)	1.8
Phosphorus (P)	0.6

Calories—3.7 per gram 105 per ounce.

Vitamins—Contains a small amount of vitamin A

Claims of Manufacturer—To be used in accordance with the physician's instructions when a food especially rich in protein of high biologic value is desired

SWEET LIFE BRAND UNSWEETENED EVAPORATED MILK

Distributor—Grosberg-Cramer Company, Schenectady, N Y

Packer—The Page Milk Company Merrill Wis

Description—Canned, unsweetened evaporated milk, the same as Page Evaporated Milk (THE JOURNAL May 30, 1931, p 1872)

COLLEGE INN PURE TOMATO JUICE

Distributor—College Inn Food Products Company, Chicago

Packers—College Inn Food Products Company, Chicago, and Welch Grape Juice Company, North East, Pa

Description—Tomato juice seasoned with salt retaining in high degree the vitamin content of tomatoes

Manufacture—Fresh, vine ripened tomatoes are washed in a squirrel cage type washer, under high pressure water spray which disintegrates any soft or badly damaged fruit. The sound, whole fruit is trimmed cored, inspected and passed through a steam box into a chopper, where it is cut into large segments and flowed into an American Utensil screw-type extractor. The head of fruit present at the opening of the juicer prevents the incorporation of air. The juice falls into aluminum kettles containing slow agitators is heated deaerated in a vacuum chamber, homogenized, pumped into the bottom of steam jacketed kettles to avoid aeration seasoned with salt again heated and automatically filled into containers (steam replaces the air in the top), which are capped and processed at 90 C for twenty minutes for bottled juice and at 100 C for forty five minutes for the canned. The time elapsing between the receiving of the tomatoes and the sealing of the filled containers is twenty minutes

Analysis (submitted by manufacturer) —

	per cent
Moisture	92.4
Total solids	7.6
Ash	1.0
Sodium chloride	0.6
Fat (ether extract)	0.0
Protein (N X 6.25)	0.0
Reducing sugars as invert sugar	4.1
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	0.4
Titratable acidity as citric acid	0.4

Calories—0.3 per gram 8 per ounce

Vitamins—The methods of preparation processing and packing are efficient for protecting the natural vitamin content

Claims of Manufacturer—This tomato juice is a good source of vitamins A and B and an excellent source of vitamin C. Especially prepared for table use and as a vitamin C supplementary food for infant feeding

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 23 1933

THE PHYSIOLOGY OF WATER

Only in comparatively recent years has the role of water in the body begun to receive the serious attention it has long deserved. True, some recognition has been given to the need of a water intake sufficiently large to compensate for the losses in respiration and perspiration as well as the more obvious output through the kidneys. However, the mere statement that water is the most abundant constituent of the tissues and is taken up and released in turn more rapidly than any other substance may suffice to indicate something of its ubiquitous biologic importance. In referring to the surprising fact that the average water content of the entire body is about 70 per cent, a recent textbook¹ explains the purpose of this aqueous component as obviously to provide a medium in which chemical actions can occur and physical chemical phenomena such as osmosis and diffusion can effect the necessary transfers of chemical compounds through tissue membranes. The actual dilution is presumably the optimal dilution for such changes. The author adds that any severe deprivation of water, leading to greater concentration of the chemical compounds present in the tissues, is followed at first by a sensation of thirst and subsequently by a series of pathologic happenings. Of all the varied types of starvation, the complete deprivation of water leads most rapidly to a fatal termination.

Under many circumstances the sensation of thirst is sufficient to help maintain near its optimum the balance between water intake and output that insures the greatest well being. Now and then one hears persons make reference to the "flushing of the kidneys" or some related pseudoscientific term without any real comprehension of what is actually involved or wherein it may have any actual physiologic significance. Few persons realize to what an extent common foods are actual carriers of water into the organism. Some of them are actually made up to an extent of 90 per cent or more of water. Furthermore there are potential sources of water in the metabolism and combustion

of the energy-yielding components of the organism. Adolph² has remarked that the water contained in a food is present in several forms, ranging from a pure solvent through water of crystallization, of colloidal hydration and of secondary valence to water combined with carbon to form carbohydrate and the like. Until the conditions are known under which each form of water exists, analytic distinctions must remain arbitrary. The main fact, however, as Adolph has pointed out, is that whenever ingestion becomes impossible it is difficult to supply water fast enough. Rectal administration, gastroclysis, parenteral infusion and subcutaneous infusion are all inadequate for any purpose except temporary or experimental use. It is well known that water may be absorbed directly into the outer layers of the mammalian skin, but the passage of significant amounts inward through the skin does not occur.

One way of attaining a more helpful appreciation of the services actually performed by water in the body is to contemplate the actual rate of turnover that this remarkable solvent experiences every day by various organs of adult persons. Some of these organs and fluids, such as the salivary glands, stomach, intestinal walls, pancreas, liver and lymph, return the water that they drain from the blood. The minimum represented in this way is 3,700 cc, a more liberal estimate is 9,800 cc. In the case of the kidneys, the colon (discharging feces) the skin with its insensible loss, the sweat glands, and in women the mammary glands, the figures for actual total loss of water from the body range from a minimum of 1,050 cc to the liberal figure 7,800 cc. These calculations, made by Adolph, permit one to estimate the total daily water turnover at something between 4,700 and 17,600 cc, representing an actual possibility of more than 4 gallons. It would be difficult to select a more striking quantitative indication of what the physiologic role of water in the organism really means.

In his detailed review of the metabolism and partition of water, Adolph has described the essential relations of the body to water intake. If water is drunk he states, an equal amount is excreted usually within two or three hours in the urine, in addition to the water excreted at the normal rate. Meanwhile the insensible loss of water increases in rate, so that the body often ends up by having as little water as it would have had if none had been ingested, if not less. The same result is obtained from drinking a solution of almost any salt in a concentration that is isomolar with the blood. But if the salt is sodium chloride or sodium bicarbonate, little or no diuresis results and the excess fluid is eliminated slowly (during twenty-four or forty-eight hours). If protein, carbohydrate or fat is taken with the water certain amounts of the fluid are retained and stored with the food until the food becomes ox-

¹ Cameron A. T. *A Textbook of Biochemistry*, ed. 4. New York: Macmillan Company, 1933.

² Adolph E. F. *The Metabolism and Distribution of Water in Body and Tissues*. *Physiol. Rev.* 13: 336 (July) 1933.

ized If the water is taken before food, it will be promptly excreted, if it is taken with or soon after the food or salt, it may be retained If water alone is taken, particularly after the excessive loss of salts, as by sweating, the dilution of the tissues may be sufficient to bring on intoxication or cramps

Dehydration has come to be regarded as a serious medical problem under certain circumstances Its occurrence is being more generally recognized, particularly in infancy Adolph has pointed out that dehydration resulting from low water intake or other processes produces many effects that are quite obvious The sense of thirst normally detects dehydration first but is readily interfered with by experimental or pathologic conditions The superficial signs of lack of water are dryness of the skin, shrinkage of subcutaneous tissues, decreased deformability of skin, and decreased rate of urinary excretion Diminution of blood volume and shrinkage of other tissues follow What is an adequate water supply? The most obvious test, Adolph insists, is to give a large quantity of water by mouth and to see whether any of it is retained, or at least whether the urine becomes diluted In most cases this indicates whether or not the body is "saturated" Changes in body weight may be used to detect the retention of water Most physiologists will agree with Adolph, however, that all measurements of the state of the body with respect to water must be relatively empirical until the mechanisms of regulation are better understood

HOSPITALS AND THE DEPRESSION

The depression has placed a serious additional burden on hospitals and clinics that minister to the poor The poor have increased in number, funds to meet the costs of their care have decreased What were the hospitals to do? There were two alternatives They must either increase their revenues or cut their costs The former has been in most instances impossible To reduce costs without thereby curtailing the quantity of service afforded or endangering its quality has been extremely difficult Though many unbalanced hospital budgets and depleted unrestricted endowment funds mark the efforts of hospitals to meet the situation, various other means have also been tried Most hospitals have lowered salaries and wages not once but two or three times They have done this not because hospital trustees have felt that their employees were overpaid but because this was an immediately effective way of reducing costs Thus hospital employees have had to bear more than their fair share of the costs of the increased load placed by the depression on the shoulders of the institutions in which they work In addition to wage reductions many hospitals have culled from their payrolls personnel who could perhaps be spared without impairing essential service to patients Some have depleted their social service departments and have given up well baby clinics routine health examinations

examinations for child placement, and other preventive and educational activities Some private hospitals have restricted their outpatient service to those patients who could pay their nominal charges, referring those who could not to municipal hospitals and clinics Some have reduced the period of hospitalization of obstetric patients to seven, five, or even three days following delivery, arranging with nursing organizations to give further after-care in the patients' homes Others have more rigidly restricted their admissions to those who are acutely ill

The necessity of practicing rigid economy has not been without a modicum of value to hospitals No doubt it has led many hospital administrators to give greater attention to the business aspects of their job Lavish expenditures for nonessentials are being curbed The building of hospitals that are not needed and the inordinate decoration and furnishing of those that are to be built have at least temporarily ceased

Efforts were made by various organizations to secure portions of state and federal appropriations for the unemployed and their dependents for the hospitals Most of these efforts have been futile Though there has been some assistance to hospitals from public relief funds in a few states, the Federal Relief Administration made it clear from the start that it would not permit the allocation to hospitals of any of the money at its disposal This position was taken, no doubt because of the inadequacy of the appropriation in relation to the immensity of the task If the way out of the present economic situation is to be marked by a rise in commodity prices, the plight of the hospitals will be still sorrier for a period Though more patients will eventually be able to pay their bills, increased costs of the goods they consume will be experienced by hospitals long before there will be an appreciable increase in their revenue from patients Most hospitals have in one way or another weathered the storm thus far The communities they serve must see to it, however, that they are neither wrecked nor disabled if the gales continue to blow

THE RESPIRATOR IN EPIDEMIC POLIOMYELITIS

The management of acute epidemic poliomyelitis presents many serious difficulties calling for a variety of clinical experience and technical skill in their successful solution After the epidemic character of the disease became clearly recognized in this country, the pressing problem seemed to be the treatment of the resulting paralysis This is probably what might be expected because of the conspicuous nature of this symptom and its distressing effects on the patient It was presently learned that damage may sometimes be done to the paralyzed patients by the institution of measures that are too energetic Draper¹ has said that it is far better

¹ Draper, George. *Leaving well alone*. In Cecil & Textor, *et al.*, eds. *Practical Pediatrics*. W. B. Saunders Company, 1930.

to err on the side of inaction than to begin massage and passive motion too soon. Fortunately, great progress has been made in the treatment of the paralyzed parts.

Of late the threatening symptoms of the respiratory embarrassment due to poliomyelitis have come into prominence. The introduction of apparatus to promote intrapulmonary exchange of air sufficient to maintain life has become widespread, especially since the development of the Drinker respirator,² now most frequently used for respiratory failure. After reporting the results of the employment of this apparatus in a considerable number of cases at the Willard Parker Hospital, New York, Brahdly and Lenarsky³ conclude that the Drinker respirator represents a decided advance in the treatment of respiratory failure in poliomyelitis. With improvement in the apparatus and in the technic of treatment, the mortality among patients who would die of respiratory failure should be greatly decreased. The time has arrived to ascertain the shortcomings as well as the merits of such promising therapeutic methods. The New York investigators observe that the medical and nursing care of the patient aside from the artificial respiration, must be kept in mind. The timely administration of sedatives and parenteral injections of fluid, laxatives or other medication will avoid interference with the artificial respiration. As it is not possible to tell whether a patient will need treatment in the respirator for a few days or for several weeks the paralyzed skeletal muscles require attention. Until the apparatus and technic are improved Brahdly and Lenarsky do not advise the treatment of patients with slight or moderate respiratory distress in the respirator. Repeated small doses of sedatives and continued reassurances, they state, will make such patients comfortable and enable them to rest but a patient with involvement of the respiratory muscles should be in a hospital near a respirator, because there is no way of telling whether or not the condition will become worse.

The spinal lesions characteristic of poliomyelitis by no means present a highly unfavorable prognosis,⁴ but when there are bulbar lesions associated with the more vital centers the outlook is not encouraging. Today the problem of when to initiate the use of the respirator perhaps occasions the most serious debate, for respirators are so expensive that the number available at any one institution is limited, and during an epidemic only the patients with the most urgent cases can be treated. For the same reason it would be impossible to give more than a few patients prolonged treatment in the respirator after they had regained the use of their respiratory muscles. Of course, respiratory failure is not the only cause of death in poliomyelitis.

Current Comment

TRANSMISSION OF COMMON COLDS BY FOOD

The possibility that common colds may be spread by fomites has been suggested by epidemiologists, but convincing experimental proof has not been available. The recent demonstration by Bliss and Long¹ of Johns Hopkins University that contaminated food may transmit this disease to chimpanzees therefore, is significant. Fifteen apes were kept for three months under scrupulous quarantine conditions. All attendants were examined daily for infections of the upper respiratory tract and remained healthy throughout the experiments. The attendants wore masks and gowns and took full aseptic precautions in preparing food and taking care of the animals. During this preliminary period the fifteen apes remained free from infections of the upper respiratory tract. At the end of the period a person suffering from a common cold was allowed to prepare food for the animals. After the food was placed in aseptic containers by this person he left the kitchen. The attendant then entered, carried the containers to the quarantine rooms and placed them in the individual chimpanzee cages. Within forty-eight hours after the first meal five of the apes developed typical symptoms of infection such as nasal discharge, nasal obstruction, mouth breathing, slight fever, and leukocytosis. Two developed a moderately severe cough.

FEDERAL MEDICAL RELIEF AND EMPLOYEES' COMPENSATION

Four million persons have been placed within the last few weeks under the coverage of the Federal Employees' Compensation Act. The mechanism of this new phase of governmental activity is described under Government Services in this issue of *THE JOURNAL*. For every injury and occupational disease sustained in the performance of duty, all the four million are entitled to medical and hospital service at government expense. For disability or death resulting from such injuries and diseases, they or their surviving dependents are entitled to compensation. This army of employees has been hired and put to work, many of them in strange fields, without medical examination or approval. The possibilities of the situation, present and future, require the serious consideration of the medical profession. Under the cover of emergency activities the government is enabled to undertake actions that would not be assumed in less feverish times without extended hearings by all the elements of the population concerned. Physicians view with alarm this gradual transmutation of medical practice into a function of government bureaucracy. History indicates that measures introduced in an emergency tend to be perpetuated by the bureaucrats developed to make them effective during the emergency. The medical profession requires some assurance that these new invasions of medical practice by the government are to be truly emergency measures in the strictest sense of that term.

² Drinker Philip and Shaw L. A. An Apparatus for Prolonged Administration of Artificial Respiration. *J Clin Investigation* 7:229 (June 20) 1929.

³ Brahdly M. B. and Lenarsky, Maurice. Treatment of Respiratory Failure in Acute Epidemic Poliomyelitis. *Am J Dis Child* 46:705 (Oct.) 1933.

⁴ Wilson J. L. Acute Anterior Poliomyelitis. *New England J Med* 206:887 (April 28) 1932.

¹ Bliss E. A. and Long P. H. *Proc Soc Exper Biol & Med* 31:31 (Oct.) 1933.

Association News

MEDICAL BROADCAST FOR THE WEEK

Talks over Network of the National
Broadcasting Company

The American Medical Association broadcasts each Monday afternoon from 4 45 to 5 o'clock, Eastern standard time (3 45 central standard time) There will be no talk on Monday December 25, or on January 1 The next talk over the National Broadcasting Company network will be on January 8

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8 55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters)

The subjects for the week are as follows

December 26 Children's Parties
December 28 Who Knows More Than the Doctor?

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9 45 to 10 o'clock over Station WBBM

The subject for the week is as follows

December 30 Plastic Surgery

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION PUBLIC HEALTH ETC)

CALIFORNIA

Personal—J Harold Williams, Ph.D., professor of education, University of California at Los Angeles, was elected president of the Southern California Society for Mental Hygiene recently —Dr Howard Morrow, San Francisco, has been appointed president of the California State Board of Health, succeeding Dr John H Graves, San Francisco, resigned

Heart Committee—Dr Gordon E Hein was named chairman of the San Francisco Heart Committee during its annual meeting, November 23, Dr John J Sampson, vice chairman, and Dr Jay Marion Read reelected secretary Fifty-five cities of California were represented at the annual heart symposium, November 22-23, and the total attendance was 655

Committees on Cancer Education—A program of cancer education for the lay public will soon be inaugurated by the Cancer Commission of the California Medical Association, according to a recent announcement Committees will be appointed representing each county society and these with the state commission will furnish speakers for meetings Local publicity will be handled by the county committees

Dr Evans to Give Herzstein Lectures—The fourth course of the Morris Herzstein lectures will be delivered at the San Francisco County Medical Society by Dr Herbert M Evans, Morris Herzstein professor of biology University of California Medical School, January 29 and 31 and February 2 Dr Evans will speak on 'Internal Secretions of the Anterior Lobe of the Pituitary Body' The lectures are given under the auspices of the medical schools of the University of California and Stanford University

COLORADO

Hospital Meeting—Dr John Andrew Longmont was chosen president-elect of the Colorado Hospital Association at its annual meeting in Denver November 15-16 Mr Guy M Hamner is president Dr George Walter Holden a former president and Mr George A Collins Denver for many years a member of the association were made life members at this meeting

Society News—At a meeting of the El Paso County Medical Society, November 8 Drs George H Stine Colorado Springs spoke on 'Treatment of Strabismus' and William C

Black Denver, "Agranulocytosis"—The Mesa County Medical Society was addressed in Grand Junction recently by Dr Edward H Peterson on "Cirrhosis of the Liver" and Mr Robert Whipple, "Aschheim-Zondek Test for Pregnancy" —Dr Cecil H Darrow, Denver, spoke before the Pueblo County Medical Society in Pueblo, November 7, on "Increasing Use of the Bronchoscope," and Dr Herbert A Black, November 21, "Treatment of Inoperable Carcinoma of the Uterus"

CONNECTICUT

History of County Society—Interesting features in the history of the New Haven County Medical Association are now brought out in prospect of the celebration of the one hundred and fiftieth anniversary of its founding, January 15 The association was the ninth county medical society formed in this country and is the second oldest of those which have been continuously in existence, it is believed Dr Leverett Hubbard, first president of the association, was also first president of the Connecticut State Medical Society, and Dr Jonathan Knight, a member of the county organization, became president of the American Medical Association in 1853 The first medical transactions to be published in this country were issued by the New Haven County Medical Association The records of the association from its first meeting in 1784 to the present time are in a perfect state of preservation and constitute a collection of exceptional interest in the history of medicine, the report says

ILLINOIS

Personal—Dr Otto H Crist, Danville, was elected president of the Wabash Valley Aesculapian Society recently The semiannual meeting will be held in Danville in May —Dr William E Kendall has been appointed chief medical officer of the Edward Hines, Jr, Hospital Hines, succeeding Dr William G Cassels, who has gone to Washington, D C, to serve as a member of the board of appeals in the Veterans' Administration —Dr Harriett Daniel, Murphysboro, has been appointed pediatrician to the state health department, it is reported —Dr David L Bley, Staunton announced his retirement from practice at a dinner, November 14, in honor of his eightieth birthday, newspapers reported He has practiced medicine in Staunton for fifty eight years

Chicago

Personal—Dr Harold Hoover has been appointed assistant in medicine in the department of internal medicine, University of Illinois College of Medicine —The University Palms, Grade Officer d'Academie, has recently been conferred on Dr Disraeli W Kobak by the French government, in recognition of his work in physical therapy

Professor Elschnig to Lecture on Cataract Extraction—Dr Anton Elschnig professor and head of the department German University Eye Clinic Prague, Czechoslovakia will conduct a course on intracapsular extraction of cataract, February 27, under the auspices of the Chicago Ophthalmological Society An illustrated lecture early in the afternoon will be followed by operations on patients before groups of not more than ten registrants The registration fee is \$10 Professor Elschnig will address the society, February 26, on "Extraction of the Lens in Myopia" Further information may be had from Dr Theodore M Shapira, 58 East Washington Street

LOUISIANA

Dr Matas Honored—At a ceremony in New Orleans, December 4, Dr Rudolph Matas, since 1928 emeritus professor of surgery, Tulane University of Louisiana School of Medicine New Orleans, was presented with the medal of the Order of Isabella the Catholic, the only Spanish decoration retained by the republic from the late monarchy, the presentation was made by the consul of Spain The honorary degree of doctor of medicine and surgery was also conferred on Dr Matas on this occasion the consul-general of Guatemala making the presentation on behalf of the University of Guatemala The mayor of New Orleans presided at the ceremony and Dr Edward L King president, Orleans Parish Medical Society was among the speakers Dr Matas was professor of surgery at Tulane from 1895 to 1927

Society News—Dr Edgar G Billinger, Atlanta Ga delivered the eighth Stanford E Chaille Memorial Oration of the Orleans Parish Medical Society, December 4 on 'Affections and Lesions of the Prostatic Urethra, with Special Reference to Transurethral Resection' Speakers before the society, November 13 were Drs David L Watson on "Use of Lime-tine Hydrochloride in the Treatment of Infectious Diseases"

Ansel M Came "Oxygen Therapy" and Sydney Jacobs, "Hyperinsulinism" A symposium on dysentery constituted the program of the society, November 27, with the following speakers Drs Charles W Duval Daniel N Silverman and Charles F Craig and Ernest Carroll Faust Ph D—The Fourth District Medical Society was addressed in Shreveport, November 7 by Drs Carl A Weiss Baton Rouge, and J Garnett Yearwood Shreveport on medical economics Dr Yearwood was elected president

MICHIGAN

Personal—Dr Bernard W Carey, Detroit, medical director of the Childrens Fund of Michigan was elected president of the Michigan Public Health Association at its annual meeting in Lansing, November 9, succeeding Dr William J V Deacon of the state department of health

Illegal Practitioner Fined—Frank J Brimmer, "Indian herb medicine man," pleaded guilty to a charge of practicing medicine without a license, November 2, in Grand Rapids and paid a \$50 fine and costs to avoid serving a sixty day jail sentence, newspapers reported Brimmer admitted prescribing for a woman who, according to a previous diagnosis by a physician, was ill with diabetes The woman's husband stated that Brimmer attempted to make him believe that he also required treatment, it was said

Course in Psychiatry and Neurology—A five day course in psychiatry and neurology for the general practitioner will begin, January 22, under the auspices of the department of graduate medicine University of Michigan Medical School Ann Arbor Emphasis will be placed on the diagnosis and management of the minor psychoses Participating in the course as instructors will be Drs Albert M Barrett, director of the state psychopathic hospital and professor of psychiatry Carl D Camp, professor of neurology Max M Peet, professor of neurologic surgery, and Udo J Wile, professor of dermatology, and others

Society News—Dr Henry Field Jr, Ann Arbor, addressed the Oakland County Medical Society in Pontiac, November 15 on "Treatment of Arthritis"—Drs William V Mullin and Albert D Ruedemann, Cleveland discussed allergy, focal infections, multiple sclerosis and retrobulbar neuritis before the Detroit Oto Laryngological Society November 15—Clarence C Little ScD Bar Harbor Maine addressed the Wayne County Medical Society, December 4 on "A Survey on Cancer"—Drs David J Levy and Wyman C C Cole conducted a round table before the Detroit Pediatric Society November 8 on feeding of the new-born infant—The Kalamazoo Academy of Medicine was addressed November 21 by Drs John L Lavan health officer of Kalamazoo on 'Present-Day Status of Immunologic Sera and Vaccines,' and George L Waldbott Detroit, "Management of the Allergic Patient"—Dr Neil I Bentley, Detroit, addressed the Monroe County Medical Society, November 16 on "Ear Conditions Following Acute Respiratory Infection"

MINNESOTA

Personal—Dr Vernon L Hart formerly of Dayton, Ohio, now of Minneapolis, has been appointed instructor in the department of orthopedic surgery, University of Minnesota Medical School Minneapolis, effective, October 1 Dr Hart is continuing the practice of the late Dr Emil S Geist—Dr Albert E Olson, Duluth, was recently appointed a regent of the University of Minnesota

Radiologic Meeting—The Minnesota Radiological Society held its fall meeting in St Paul, November 11 The following program was presented

Dr Willard L Burnap Fergus Falls Osteochondritis Juvenilis Deformans

Dr Maurice A Shillington St Paul Observations from a Clinical Tour

Dr Kano Ikeda St Paul Pneumonia in Young Infants Associated with the Aspiration of Various Oils

Dr Walter H Lde Minneapolis The Roentgen Diagnosis of Placenta Praevia

R B Wiley MA Rochester NY The Improvement of Chest Radiography

Dr George M Landau Chicago The American Registry of Radiological Technicians

In addition Dr Alfred W Adson Rochester, spoke on 'The Value of Ventriculography and Encephalography to the Brain Surgeons' and L A Carlson St Paul showed a motion picture demonstrating the manufacture of x-ray film

MISSISSIPPI

State Board Lends X-Ray Machine—A philanthropic agency recently presented a portable x-ray machine to the Mississippi State Board of Health, to be sent out from time to time to counties in which there are no x-ray machines Only those who are sent to the chest clinics by physicians or accompanied by physicians will be examined

Resolution on Mosquito Eradication—The Issaquena Sharkey-Warren Counties Medical Society recently adopted a resolution urging the appointment of a committee to study malaria control and the eradication of mosquitoes Declaring the incidence of malaria in and about Vicksburg to be the highest for many years, the society recommended that a committee representing the Warren County Health Department, the Vicksburg Chamber of Commerce, the mayor and aldermen of Vicksburg, the supervisors of Warren County, and the Mississippi River Commission and district engineers work with the malaria committee of the society to achieve the eradication of mosquitoes

MISSOURI

Dr Cannon Gives Hodgen Lecture—Dr Walter B Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, will deliver the annual Hodgen lecture of the St Louis Medical Society, January 9 His subject will be "The Significance of the Emotional Level"

Advisory Committee—An advisory committee of members of the Missouri State Medical Association has been appointed to cooperate with the state board of health Members of the committee appointed by Dr Warren L Allee Eldon, president of the association, are Dr Williams McKim Marriott, St Louis dean, Washington University School of Medicine, Father Alphonse M Schmittalla St Louis, dean, St Louis University School of Medicine Dr Dudley S Conley, Columbia, dean, University of Missouri School of Medicine Dr Arthur R McComas, Sturgeon, chairman, Dr William H Breuer, St James Dr Jabez N Jackson, Kansas City, and Dr Edward J Goodwin, St Louis, ex officio The appointment of the committee was in response to a request of the state health department

Society News—A symposium on inflammation of the female pelvis was presented before the Cole County Medical Society in Jefferson City, recently, by Drs Richard P Dorris, Thomas J Kelly, Edward E Mansur and William A Clark—Dr William M Kinney Carthage, gave a paper on "Interpretation of the Normal Chest Roentgenogram" before the Jasper County Medical Society, November 14—At a meeting of the Nodaway County Medical Society in Maryville, November 17, Drs John L Myers and George H Thiele, Jr, Kansas City, were the guest speakers on Practical Suggestions for the General Practitioner on Ear, Nose and Throat Work' and 'Diagnosis and Treatment of Anorectal Disease,' respectively—November 28 was designated as "past presidents' night" for the St Louis Medical Society Dr Morris Fishbein Chicago editor of THE JOURNAL, spoke on "Present Trends in Medical Practice"

NEBRASKA

Personal—Dr James T Googe, Meridian, Miss, has been appointed health officer of Lincoln He assumed the office December 1—Dr Archibald R McIntyre, associate professor of physiology and pharmacology at the University of Nebraska School of Medicine, Omaha, has been promoted to a professorship

NEW JERSEY

Tribute to Hospital Head—Dr James F Ackerman president of the board of governors of the Fitkin Hospital, Asbury Park was guest of honor at a testimonial dinner sponsored by the Monmouth County Medical Society, September 14 Tributes were paid to Dr Ackerman by Gov Harry Moore, Major Clarence E F Hetrick of Asbury Park, Dr Claude A Burrett dean, New York Homeopathic Medical College, New York Dr Samuel A Brown, dean, New York University and Bellevue Hospital Medical College, Dr Frederic J Quigley Union City, president, Medical Society of New Jersey and Dr Robert E Watkins, Belmar, president, Monmouth County Medical Society Dr William G Herrman Asbury Park, was toastmaster About 300 persons attended the dinner

Society News—Dr Roger H Dennett, New York addressed the Bergen County Medical Society, Hackensack, November 14, on 'Everyday Problems of the Pediatrician and

the General Practitioner" The society's program of graduate courses began with a series for November on gynecology given by Dr David Corn at the Hackensack Hospital—Drs Joseph T Beardwood, Jr, and Frederick A Bothe, Philadelphia, discussed medical and surgical management, respectively, of hypothyroidism and hyperthyroidism at a meeting of the Atlantic County Medical Society, Atlantic City, November 10—Dr George Griffith, Philadelphia, addressed the Camden County Medical Society, Camden November 7, on cardiac arrhythmias—Drs Harrison S Martland, Newark, and Charles Norris, New York, and Mr Louis Costuma of the New York City police department addressed the Associated Physicians of Montclair and Vicinity in Bellevue, October 27, on medical methods of dealing with crime

NEW YORK

University News—The University of Buffalo announces competition for its annual award of a gold medal to the author of a paper on an ophthalmologic or allied subject Details may be obtained by writing to the dean of the medical department or to Dr Harold W Cowper, 543 Franklin Street, Buffalo, chairman of the committee on award

Health at Utica—Telegraphic reports to the U S Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended December 9, indicate that the highest mortality (20.2) appeared for Utica and that the rate for the group of cities as a whole was 12 The mortality rate for Utica for the corresponding week of 1932 was 11.7 and the rate for the group of cities, 12.3 The annual rate for the eighty-five cities was 10.9 for the forty-nine weeks of 1933, as against a rate of 11.1 for the corresponding period of last year

Society News—Speakers at the annual meeting of the Medical Society of the County of Franklin, Malone, October 30, were Drs William V Cone and David W MacKenzie, Montreal, Que, on "Abscess of Brain—Diagnosis, Pathology and Treatment" and "The Prostate—Its Pathological Aspects and Newer Forms of Treatment," respectively, and Harold H Berman, Ogdensburg, on "Psychoneurosis"—Dr Louis C Kress Buffalo, gave a paper on "Five Year Cancer Cures" at a meeting of the Dutchess-Putnam Medical Society, November 8, in Poughkeepsie—A symposium on neurology was presented by three Syracuse physicians before the Medical Society of Jefferson County, Watertown, November 9, Dr Eugene N Boudreau discussed pathology, Dr Wardner D Ayer, pathology, and Dr Albert B Siewers, clinical manifestations

New York City

New Clinic for Occupational Disease—New York University and Bellevue Hospital Medical College has opened a special clinic for occupational diseases, with a laboratory equipped for the work Cases of lead poisoning silicosis, occupational dermatoses and benzene poisoning have already been handled in the clinic which meets Wednesday afternoons Physicians and industrial health workers have been invited to refer cases

Dr Wynne to Retire as Health Commissioner—Dr Shirley W Wynne health commissioner of New York, has filed application for retirement to take effect December 31 Dr Wynne entered the department in October 1907, as a medical inspector and served as assistant registrar and chief of the division of statistical research up until 1920 when he was named assistant to the commissioner In 1924 he was made director of hospitals In 1926 Dr Wynne was appointed deputy commissioner and on the resignation of Dr Louis I Harris in 1926 he became commissioner

Gifts to Columbia—Recent gifts to Columbia University for medical purposes include the following

Rockefeller Foundation \$29,574 for various purposes \$6,000 for aid of studies of the common cold

General Education Board \$4,583.33 toward maintenance of the department of the practice of medicine \$8,000 toward support of the sub-departments of tropical medicine

Edward S Harkness \$9,967 toward support of the department of diseases of children

Josiah Macy Jr Foundation \$8,462.50 for the work of various departments

Th Lilly and Company \$2,400 for research in the department of pathology

Commonwealth Fund \$18,000 for research into causes of dental decay

W K Kellogg Foundation \$10,000 for study of rheumatic fever under the direction of Dr Walter W Palmer

National Research Council \$5,000 for special research in the department of anatomy

OHIO

Professor of Anatomy Appointed—Rollo C Baker, Ph D, for many years a member of the department of anatomy at Ohio State University College of Medicine, has been appointed chairman of the department to succeed the late Francis L Landacre, Ph D

Personal—Dr and Mrs Harry W Powers, Amherst, celebrated their fiftieth wedding anniversary, November 29—Dr Floyd R Stamp Alliance has been elected health commissioner of Stark County—Dr Seward Harris, Lisbon, has been appointed health commissioner of Columbia County to succeed the late Dr Thomas T Church, Salem

Cincinnati Physicians Install Business Bureau—The Physicians' Business Bureau has recently been organized in Cincinnati, with the approval of the Cincinnati Academy of Medicine, for credit rating of patients and collection of troublesome accounts Dr Louis Howard Schriver, a past president of the academy of medicine, is president of the bureau The academy has recently installed a telephone service to locate physicians and to give information to the public on questions of public health Questions concerning hospitals and other institutions will also be answered

Tuberculosis Week in Columbus—To further education of the public and stimulate activity of the medical profession concerning tuberculosis, the Columbus Academy of Medicine carried out a program, November 13-17 Clinics were held each day at various hospitals for physicians and the public was invited to inspect hospitals and clinics treating the tuberculous, November 16 Dr Jay Arthur Myers, Minneapolis, addressed a meeting of the academy, November 13 on "Modern Aspects of the Diagnosis and Treatment of Tuberculosis" and Dr Edward J O'Brien, Detroit, addressed a dinner meeting, November 17, on "Collapse Therapy in the Treatment of Pulmonary Tuberculosis" Both guests also gave radio talks Dr Myers addressed the physicians at Columbus Preventorium on childhood tuberculosis and Dr O'Brien spoke at a special meeting of the Ohio Sanatorium Association at the Franklin County Sanatorium, on thoracoplasty The Columbus Tuberculosis Society also participated in the activities with demonstrations of dispensary cases

PENNSYLVANIA

Dinner to Dr Falkowsky—The Lackawanna County Medical Society recently gave a dinner in honor of Dr Charles Falkowsky, Jr, Scranton, president of the Medical Society of the State of Pennsylvania during the past year Dr Donald Guthrie, Sayre president of the state society, and Dr Edward A Schumann Philadelphia delivered addresses and Dr Leonard G Redding, Scranton, presented an engraved medal to Dr Falkowsky on behalf of the society Dr Ernest L Kiesel, Scranton, was toastmaster

Secretary for Thirty-Eight Years—The Bucks County Medical Society gave a dinner at Doylestown November 14 in honor of Dr Anthony F Myers Blooming Glen, who has been secretary of the society since 1895 Dr Myers has been a member of the society since 1888 and has missed only four meetings since that time it was said In 1893 he served as president Speakers of the evening were Drs Moses Behrend Philadelphia, president-elect of the Medical Society of the State of Pennsylvania and Wilmer E Krusen, Philadelphia Dr John B Carrell Hathboro, was toastmaster The meeting also marked the eighti-fifth anniversary of the founding of the society

Philadelphia

Navy Hospital Cornerstone Laid—The laying of the cornerstone of the new Navy Hospital was a feature of the annual celebration of Navy Day, October 27 Rear Admiral Charles E Riggs, former surgeon general of the navy, officiated and Rear Admiral Perceval S Rossiter, present surgeon general summarized the history of the hospital The Bureau of Medicine and Surgery, Washington D C has the clinical records of the hospital, in which the first entry is dated May 3 1822 The new building will have 650 beds and the total cost is estimated at \$3,200,000

Personal—Dr William E Parke was elected president of the Association of Ex-Residents and Resident Physicians of the Philadelphia General Hospital at the annual dinner December 5 Dr George Wilson was reelected secretary—Dr Emily L Van Loon was recently elected president of the graduate council and alumnae association of the Woman's Medical College of Pennsylvania—Dr Earl D Pond, medical director of the Institute of the Pennsylvania Hospital, has established a fund for mental patients with the \$10,000 accom-

panying the Philadelphia Award for distinctive community service, which he received last February (THE JOURNAL, March 4, page 671) —The West Philadelphia Medical Association gave a dinner, November 28 in honor of Dr Moses Behrend, president-elect of the Medical Society of the State of Pennsylvania

Society News—Dr Alvin M Pappenheimer, professor of pathology, Columbia University College of Physicians and Surgeons, New York, gave the annual Gross Lecture of the Pathological Society of Philadelphia, December 14, on "Certain Nutritional Disorders of Laboratory Animals"—Drs Helena E Riggs and Paul Sloane addressed the Philadelphia Neurological Society, December 15, on "Significance of Colloid Gold Curve in Nonluetic Infections" and "Newer Concepts in the Treatment of Chorea," respectively—Dr George S Crampton, professor of ophthalmology, University of Pennsylvania Graduate School of Medicine, gave an illustrated lecture on the manufacture of ophthalmic lenses, with special reference to bifocals, at the new Franklin Institute December 20—The Philadelphia Health Council and Tuberculosis Committee announced that the number of cases of tuberculosis diagnosed in its clinics from January through October showed a 17 per cent increase over the same period of 1932

TEXAS

Society News—Dr Elbert Dunlap, Dallas, was elected president of the Texas Association of Obstetricians and Gynecologists at the recent annual meeting in San Antonio, September 30—The El Paso County Medical Society cooperated with the city-county health department in a campaign of immunization against diphtheria for the month of November The department was to furnish toxoid to physicians and urged parents to send children to the family physician Indigents were to be given free immunization on proof that they were unable to pay a physician—Dr Platt L Allen presented a paper on epidemic pleurodynia at the meeting of the Parker County Medical Society, October 3, in Weatherford—Speakers at the meeting of the Harris County Medical Society, Houston, October 11, were Drs Lloyd U Lumpkin on "Nerve Block Anesthesia," and Herman W Johnson, Robert A Johnston and Henry O Nicholas, Ph D, on "Eclamptic Toxemia A Consideration of the Poisonous Amnes as a Possible Cause"

WEST VIRGINIA

Heart Association Meeting—The medical department of the University of West Virginia and Monongalia County Medical Society were joint sponsors of a meeting of the West Virginia Heart Association at the university in Morgantown November 28-29 Dr Arthur M Shipley, Baltimore, was the guest speaker at a dinner, Tuesday evening, November 28, on "Surgery of the Heart and Pericardium" Among other speakers at the sessions were the following members of the university faculty Drs Samuel J Morris, on anatomy of the cardiovascular system Dr Edward J Van Liere, physiology Clement C Fenton, bacteriology and pathology of cardiovascular disease, and Norman A David, pharmacology and drug therapy of heart disease Dr Oscar B Biern, Huntington, is president of the association, Dr Raphael J Condr, secretary

WISCONSIN

Society News—Dr M Reese Guttman, Chicago, addressed the Fond du Lac County Medical Society, November 8 on mastoiditis and its complications—At a meeting of the Tri-County Medical Society (Juneau-Vernon-Monroe) at Tomah, October 12, speakers were Drs Joseph Dean, Madison, on arteriovenous aneurysms, Fred W Gaarde, Rochester, Minn, allergy, and Paul A O'Leary, Rochester, dermatology—Dr Avery D Prangen, Rochester, Minn, addressed the Rock River Eye, Ear, Nose and Throat Society, October 17, in Beloit, on new methods in surgery of the eye

District Meetings—The Seventh Councilor District Medical Society held its annual meeting at La Crosse, November 8 Medical and surgical clinics were held at La Crosse hospitals in the forenoon and a program of addresses in the afternoon Speakers were Drs Ralph M Waters and John W Harris, Madison, on anesthesia in obstetrics, Jay Arthur Myers, Minneapolis, diagnosis and treatment of pulmonary tuberculosis, Walter C Alvarez, Rochester, Minn, types of nervous indigestion, and Stanley Seeger, Milwaukee, treatment of burns—Dr Kellogg Speed, Chicago, was guest speaker before the Ninth Councilor District Medical Society, Wausau November 8 on "Unhappy Results in Treatment of Fractures"

GENERAL

Dr Adams Elected President of Chemical Society—Roger Adams, Ph D, since 1926 head of the department of chemistry, University of Illinois, Urbana, has been chosen president of the American Chemical Society Professor of chemistry at the school since 1919, Dr Adams' special interest has been in organic chemistry, particularly local anesthesia and chaulmoogra oil derivatives He was associate editor of the *Journal of the American Chemical Society* for many years and was awarded the William H Nichols Medal in 1927 Dr Adams was a member of the Federal Committee on Synthetic Drugs during the World War

Society for Study of Arthritis—The fifth annual meeting of the American Society for the Study of Arthritis was held in New York, December 8, with the following program

Dr Reginald Burbank, New York Brief Historical Resume Leading to the Present Concept of Arthritis
Drs William H Park and Anna W Williams New York Bacteriology of Rheumatoid Arthritis and Allied Conditions
Dr Lazaros G Hadjopoulos New York Correlation of Findings in Specific Etiology of Rheumatoid Arthritis
Allan Winter Rowe Ph D Boston Disturbed Liver Function as a Complication in Arthritis
Dr Charles F Tenney, Jr New York Artificial Fever Produced by the Short Wave Radio and Its Therapeutic Indications

Association for Advancement of Science—At the winter meeting of the American Association for the Advancement of Science in Boston, December 27-30, the section on medical sciences will devote the first two days to symposiums on pneumonia, sociology and medicine, tuberculosis, appendicitis and typhoid carriers The section will meet jointly with the American College of Dentists, December 29, and with the American Society of Parasitologists, December 30 Dr Charles R Stockard, New York, vice president for the section, will deliver his address Wednesday morning, December 27, on "The Internal Secretions and Genetic Quality in Structural Development"

Dr Jessup Becomes President of Carnegie Foundation—Walter Albert Jessup, LL D, has resigned as president of the State University of Iowa to become president of the Carnegie Foundation for the Advancement of Science, it was announced, December 13 Henry S Pritchett, LL D, president emeritus of the foundation, has been acting president of the foundation since the death in September of Henry Suzzallo Sc D Dr Jessup became dean of the College of Education at Iowa in 1912 having been associated with the University of Indiana in a similar capacity He became president of the University of Iowa in 1916 His resignation is expected to become effective, May 1 1934

Student Health Association—The fourteenth annual meeting of the American Student Health Association will be held in Chicago, December 28-29, at the Hotel Stevens, under the presidency of Dr Dean F Smiley of Cornell University, Ithaca, N Y The program includes addresses by the following physicians

Dr Alfred Adler New York Individual Psychology and Education
Dr Jay Arthur Myers Minneapolis Treatment of Tuberculous Students
Dr Arville O DeWeese Kent Ohio Adjustment of Instruction in College Hygiene to the Informational Level of Students
Dr Edward V L Brown Chicago Eye Problems of Students
Dr William G Leaman Jr Philadelphia The Heart and Athletics
Dr Elizabeth E G Whitney San Francisco Personality Problems of College Women
Dr Robert T Legge Berkeley Calif Development of Facilities to Remedy Physical Defects at Student Rates
Dr Oliver S Ormsby Chicago Common Skin Diseases and Their Diagnosis
Dr Gladys Dick, Evanston Ill Control of Scarlet Fever Among Adults
Dr Harold D Palmer Philadelphia Mental Hygiene Problems in a University

There will be a symposium on prevention and treatment of athletic injuries, presented by Drs Joseph E Raycroft, Princeton, N J, Marvin A Stevens, New Haven, Conn, and Lewis K Ferguson, University of Pennsylvania At the annual association luncheon, Thursday, December 28 Dr Morris Fishbein, Chicago, editor of THE JOURNAL, will speak on "Student Health Service and the Medical Practitioner"

Society News—Dr Hugh Leslie Moore, Dallas, Texas, was elected president of the Southern Medical Association to succeed Dr Irvin Abell, Louisville, Ky, at the annual meeting in Richmond, Va November 17 Vice presidents elected were Drs Fred M Hodges Richmond, and Thomas A Groover, Washington, D C The 1934 session of the association will be held in San Antonio Texas—Dr Arville O DeWeese, director of student health service Ohio State College, Kent, Ohio, was elected president of the American Association of School Physicians at the annual meeting in Indianapolis in

October Dr William A Howe, Albany N Y, is secretary
—The next annual meeting of the National Tuberculosis Association will be held in Cincinnati, May 14-17, 1934 Saranac Lake has been designated the place for the session in 1935
—The American Social Hygiene Association has recently conducted a series of institutes for Negro physicians for demonstration of technic in diagnosis and treatment of syphilis in Savannah, Ga., Charleston, S C, and Jacksonville, Fla
Dr Walter J Clarke of the New York staff directed the institutes in cooperation with local health and medical authorities—Dr William S Middleton Madison, Wis, was elected president of the Central Society for Clinical Research at its recent meeting in Chicago Dr Lawrence D Thompson St Louis, was reelected secretary

Bequests and Donations—The following bequests and donations have recently been announced

Central Maine General and St Mary's General hospitals Lewiston Maine \$5000 each by the will of Edward H Delano of Lewiston
Harvard Medical School Boston \$50000 under the will of the late Dr Jeremiah J Corbett
Presbyterian Hospital \$121 647 and New York Post Graduate Hospital and Medical School \$30000 by the will of the late William Colgate Montefiore and Sydenham hospitals New York \$5000 each by the will of the late Henry A Dix
Hospital of the Servants for Relief of Incurable Cancer Hawthorne N Y, \$50000 under the will of the late Rebecca O Burchinal
Presbyterian Hospital Philadelphia and West Jersey Homeopathic Hospital Camden N J \$5000 each under the will of the late Mrs Edith B Cunningham, Philadelphia
Mount Carmel Hospital Columbus Ohio \$4000 Children's Hospital and Franklin County Sanatorium \$1000 each by the will of the late Elizabeth F Schmidt
Mansfield General Hospital Mansfield Ohio \$10000 by the will of Charles A Ritter
Episcopal Hospital Philadelphia \$2000 under the will of Marianna B Griffiths
Huron Road Hospital Cleveland \$100000 by the will of Mrs Mary E Wickham
St Luke's and St Mary's hospitals Duluth Minn \$7000 and \$5000 respectively, by the will of the late August Fitger
Lenox Hill Hospital New York \$25000 by the will of the late Heinrich E F Sandhagen
Middlesex General Hospital New Brunswick N J and Morristown N J Memorial Hospital, \$5000 each by the will of Mrs Caroline McEann Johnson
Memorial St Luke's and Children's Homeopathic hospitals Philadelphia \$2000 each and Northeastern Hospital \$1000 under the will of John Henry Gallati
Stuyvesant Square Hospital \$5000 and St Vincent's Hospital New York \$2500, from the estate of Raymond Blackwood
University of Pennsylvania Philadelphia \$10000 under the will of the late Mrs Louise M Holroyd for cancer research

Orthopedic Meeting—The second annual meeting of the American Academy of Orthopedic Surgeons will be held at the Palmer House in Chicago January 8-10 The first day will be devoted to seminars, the second to papers and the third to clinical presentations of cases and end-results There will be symposiums on fractures, bone tumors and equalization of lengths of legs Conducting seminars will be Drs Lewis J Pollock Chicago, Carl Wiggers Cleveland George E Brown, Rochester, Minn, Mont R Reid Cincinnati, Louis G Herrmann, Cincinnati, Geza De Takats, Chicago Earl R Carlson New York Walter O Klingman New York Dallas B Pheister, Chicago, and Richard H Jaffe, Chicago Papers will be presented by the following physicians

Frank E Curtis Detroit Decancellation of Os Calcis Cuboid and Astragalus for Correction of Club Foot
Walter Bauer Boston Blood Calcium Studies in Orthopedic Conditions Including Parathyroid Disorders
Garry De N Hough Jr Springfield Mass End Results of Study of 130 Cases of Hip Flexion Deformity Due to Poliomyelitis
Vaughton Dunn Birmingham England Stabilization Operations in Poliomyelitis with Especial Reference to Feet
Arthur Steindler Iowa City Pott's Paraplegia
Emuel D Smith Milwaukee Fractures of the Femoral Shaft Maintenance of Reduction and Fixation by Means of Drilled Metal Screws Immediate and Continued Ambulation
Joel E Goldthwait Boston Recognition of Skeleton Atrophy in the Cause and Treatment of Fractures of the Spine and Hip with Especial Reference to Nonunion
John D Camp Rochester Minn Roentgenographic Evidence of Spinal Cord Tumors and Bone Lesions Due to Parathyroid Disturbances
Marius A Smith Petersen Boston Internal Fixation of Fractures of the Neck of the Femur
Henry Heyward Wescott Roanoke Operation for the Internal Fixation of Transversal Fractures of the Femur
Alph H Chormley Rochester Minn Low Back Pain with Sciatica The Facet Syndrome
John S Coulter Chicago Local Applications of High Frequency Current (Medical Diathermy)

Dr Morris Fishbein Chicago will be toastmaster at the banquet and make the presentation of a medallion to the outgoing president Dr Willis C Campbell Memphis Tenn Gordon J Laing LI D Chicago will speak following the banquet on The Medicine Man Ancient and Modern—Are Doctors Human

FOREIGN

Society News—The French Medical and Scientific Alliance was recently founded by physicians interested in research for the purpose of holding meetings of research workers, honoring those whose work contributes to progress in medicine and encouraging young workers to devote themselves to research Information concerning the new society may be obtained from Dr Claoue, 39, rue Scheffer, Paris 16

Eastman Dental Clinic in Brussels—The cornerstone for the George Eastman Dental Institute of Brussels was laid at a ceremony, October 20 Dave H Morris, American ambassador to Belgium, and Harvey J Burkhart, D D S, representing the Eastman interests, were present as Queen Elizabeth signed the charter and sealed it in the cornerstone It is expected that the building will be completed in 1934

International Congress on Rheumatism—The fourth International Congress on Rheumatism will be held in Moscow, May 3-6 1934 Subjects to be discussed are clinical aspects of rheumatic fever, indications for balneologic treatment of rheumatic patients, rheumatism in transport workers, mine workers and metal workers and the occupational factor in rheumatic diseases in the light of experimental results Further information may be obtained from the headquarters of the International League Against Rheumatism, Keizersgracht 489 Amsterdam, Holland

Publications on Malaria Wanted—The director of the Central Malaria Library created by the Stazione Sperimentale per la Lotta Antimalarica in 1925 requests that all malarialogists send to it books, reports and articles on malaria in order that the library may be made as complete as possible Photo stat copies of any articles in the library may be obtained at the cost of production All publications and requests should be addressed to the Director at the station, Corso Vittorio Emanuele, 168, Rome (116) In addition to the photostat service, the station issues each year an index to malaria literature

Personal—Prof Jules Gonin Lausanne France, received the William Mackenzie Medal of the Royal Faculty of Physicians and Surgeons, Glasgow, October 13, in recognition of his contributions to ophthalmology, especially in the treatment of detachment of the retina He delivered the William Mackenzie Memorial Lecture on "The Evolution of Ideas Concerning Retinal Detachment Within the Last Five Years"—Dr Richard Atkinson Stoney, Dublin, has been elected president of the Royal Academy of Medicine of Ireland, succeeding Dr Thomas G Moorhead—Dr R F Guymer Surrey, England, received the Sir Charles Hastings Clinical Prize for 1933 awarded by the British Medical Association for a study entitled "Tonsillectomy—Before, During and After"

Government Services

Federal Medical Relief and Employees' Compensation

A new phase of governmental entrance into the practice of medicine has developed by a gradual evolution First came payment for medical services, but not for hospital services, for destitute unemployed persons, by the federal government through state relief administrations Next destitute unemployed persons were put to work, on state payrolls, through grants of federal money, at wages assumed to be sufficient to enable them to provide medical and hospital services for themselves and their dependents Now these employed men estimated at two million in number are transferred to federal payrolls—and two million more men will be added The wages are regarded as sufficient to enable the workers to live in decency and comfort yet they receive also the medical and hospital benefits conferred on federal employees by the United States Employees' Compensation Act of 1916, for diseases and injuries arising out of the performance of duty

The Federal Emergency Relief Act approved May 12 1933 created the Federal Emergency Relief Administration charged with the duty of making grants to the several states to aid in meeting the costs of furnishing relief and work relief and in relieving the hardship and suffering caused by unemployment By the National Industrial Recovery Act approved June 16 1933 a Federal Emergency Administration of Public Works was authorized to prepare a comprehensive program of public works including projects of the character theretofore constructed or carried on either directly by public authority or with public aid to serve the interests of the general public and with a view to increasing employment quickly to construct

finance or aid in the construction or financing of any public works project included in the program thus prepared. Because of the magnitude and the nature of the task assigned to the Federal Emergency Relief Administration of Public Works, unexpected delay occurred in putting to work, for the purpose of increasing employment, the money that had been provided for that purpose. The President, therefore, November 7, created the Federal Civil Works Administration and appointed Harry L. Hopkins as Federal Civil Works Administrator. Mr. Hopkins occupies also the position of Federal Emergency Relief Administrator. To the newly created Federal Civil Works Administration the Board of the Federal Emergency Administration of Public Works allocated from public works funds \$400,000,000 to enable it to provide regular work on public works at regular wages, for unemployed persons able and willing to work. Employees under this plan are to be hired by state and local civil works administrations set up by the administrator as federal agencies, without investigations into the financial status of the persons employed, in an effort to meet the needs of the many destitute unemployed men and women who are willing and eager to work but who are not willing to have their names entered on relief rolls.

The four million men and women hired by the Federal Civil Works Administration are to be employed on projects of a character heretofore carried on by public authority or with public aid, to serve the interests of the general public. The projects undertaken must be of such a character as to be socially and economically desirable and must be susceptible of being undertaken quickly. They are described by Public Works Administrator Ickes as projects on the borderline of public works. Among the projects suggested are the construction of parks and play grounds, the repairing of roads, the building of feeder roads, the extending of sewer systems and water mains and general activities in the field of sanitation exclusive of such work as collecting garbage, cleaning streets, removing snow and cleaning parks. While the work is to be decentralized as far as practicable, the agencies, state and local, through which it is undertaken are to be regarded as federal agencies and the money used for the work a part of a federal appropriation is to be disbursed by federal officers. The money used in any state is not a grant to the state but in determining the amount that is to be expended in any state a formula is to be employed that takes into consideration the population of the state and the number of persons on the relief rolls. The expenditure of this appropriation within a state will not prevent the allocation of federal funds to that state for direct relief.

Wage rates are to vary. No maximum rates are fixed. The minimum rate for unskilled labor in the South is 40 cents an hour and in the North 50 cents an hour. In the South, skilled labor is to receive not less than \$1 an hour, and in the North not less than \$1.20. Rates of pay must in any event be such as will with a thirty hour week enable an employee to live in decency and comfort. These wages it is assumed, will enable every employee to pay for such medical service as may be needed by him and those dependent on him. If, however, an employee because of the stress of circumstances is unable to do so he may apply to the state or local emergency relief administration for aid, including medical services. Since employees on the rolls of state and local civil works administrations are hired by and through federal agencies and paid from a federal appropriation, they are within the purview of the Federal Employees' Compensation Act and are entitled to medical and hospital services at government expense if they are injured or develop disease in the course of their employment. The administration of that act as it applies to these employees is under the United States Employees' Compensation Commission and the rules applicable to compensation for federal employees generally are applicable with but slight modifications to employees on the rolls of the Federal Civil Works Administration.

Employees are entitled to treatment for only such injuries as they sustain in the performance of duty and for occupational diseases. Diseases that do not show a direct causal relationship to the employee's work, and injuries not sustained in the performance of duty, do not entitle the employee to medical and hospital treatment at public expense. The fact that a disease develops while an employee is engaged on a civil works project is not of itself sufficient to entitle him to treatment. If there is doubt as to whether the disability of an employee is due to an injury sustained in the performance of duty or to disease contracted in that manner the local civil works administrator is to send the disabled employee to a United States medical officer or to a designated physician, with a request for treatment and is to take immediate steps to determine the origin of the disability. Reasonable medical, surgical and hospital services and supplies are to be provided, and such transportation as is

necessary to that end. Government regulations contemplate treatment at medical establishments maintained by the federal government. Where adequate federal medical facilities are not available, other public medical facilities, state, county or municipal, may be utilized. The United States Employees' Compensation Commission has designated, too, some four thousand physicians to render medical treatment where no government establishments are available. Where either government medical facilities or such designated physicians are available, they must be employed. Where they are not, local civil works administrators may arrange for medical care by such reputable physicians as will agree to charge only stipulated fees. Physicians designated by the Federal Employees' Compensation Commission and private physicians and hospitals specially employed are to be paid fees not in excess of those charged patients in the same income class as the injured person. Osteopaths and chiropractors may be employed only when recommended by the government or by designated physicians. The Federal Employees' Compensation Commission keeps postmasters and the larger establishments of the federal government informed concerning government and designated medical facilities and any official or employee can obtain information concerning them from the local postmaster.

An employee may refuse the medical or hospital treatment proffered by the government but if he does so the government will not pay for the medical or hospital services that he provides for himself. An employee treated by his private physician or in a private hospital selected by him must report from time to time to a United States medical officer or to an officially designated physician, for examination to determine whether or not his disability continues. An injured or ill employee seeking treatment at government expense must leave with the physician or hospital from whom he receives service a written request from the local civil works administrator that such service be rendered and a blank voucher. Bills for service cannot be paid in the absence of such authority. If it has been impracticable however for an employee to obtain such a request a medical officer or a designated physician may give temporary treatment provided proper authorization be obtained from the employee's official superior within forty-eight hours. Unless such authorization is obtained, the medical officer or designated physician has no authority to give further treatment at public expense. Vouchers for services, accompanied by a copy of the official request for them are to be transmitted to the Federal Employees' Compensation Commission for settlement. A separate voucher is to be submitted for each employee treated on the form provided for that purpose. Vouchers should be verified by the signature of the employee whenever practicable and in all cases they must be certified by the local works administrator.

Physicians desiring to have their names placed on the list of physicians authorized by the Federal Employees' Compensation Commission to treat federal employees suffering from injuries or diseases caused by the discharge of their duties, in places where United States hospitals and dispensaries are not available or are inadequate, should make application to the Federal Employees' Compensation Commission, at Washington, D. C. It has not been the policy of the Commission to designate an indefinite number of such physicians in any one locality, but changes are made necessary from time to time by deaths, resignations and changes of physicians' residences, and with the present increase in the number of federal employees entitled to treatment, an increase in the number of designated physicians seems inevitable. It will be well, however, for any physician who contemplates accepting any such designation to learn the requirements of the commission with reference to examinations, treatment, records and reports, and to learn the rates of compensation allowed by the commission in his community, before he does so.

Toxicologist Wanted

The U. S. Civil Service Commission invites applications for toxicologist positions of various grades to be filed before January 11. At present there is a vacancy in the position of assistant toxicologist in the Bureau of Chemistry and Soils, Department of Agriculture with headquarters in San Francisco. The entrance salary for this position ranges from \$2,600 to \$5,400 a year less a deduction of not to exceed 15 per cent as a measure of economy and a retirement deduction of 35 per cent. Competitors will not be required to report for a written examination but will be rated on their education and experience. Full information may be obtained from the Civil Service Board of Examiners at any postoffice or customhouse in any city or from the U. S. Civil Service Commission, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec 2, 1933

Synthetic Vitamins Versus Natural Foods

Dr H A Harris, professor of clinical anatomy at University College and author of 'Bone Growth in Health and Disease' has done research and shown that the transverse lines on the long bones, which are usually ascribed to rickets, are due to temporary cessation of growth. He criticizes in the *Times* the prescribing of synthetic instead of natural foods. He quotes a pioneer of physiologic chemistry, Prout who in 1831 maintained, in his Goulstonian lecture, that 'nature will not permit the chemist to officiate as her journeyman even in the most trifling degree.' Professor Harris thinks that before the community is asked to exchange natural cod liver oil, with its richness in vitamins A and D, for synthetic preparations much more reliable information must be provided as to the effect of calciferol on the other stigmas presented by the rickety child. Milk, eggs, butter, cheese and adequate proteins rich in essential amino acids are still required for the maintenance of growth and health in the child. There are no substitutes for a generous all round diet of fresh food. This is as fundamental as the second law of thermodynamics. Professor Harris holds that rickets is a disorder of growth which appears essentially during the three main 'springing up periods' of life—almost exclusively in the first two years of life and rarely in the years associated with the eruption of the second teeth or with puberty. The infantile starvelings of the slums with their chronic malnutrition are not growing fast enough to acquire rickets. The extent of malnutrition cannot be gaged by the prevalence of rickets. The extent of the cure and healing of rickets cannot be gaged solely by the improvement in the roentgenographic appearance of the bones. Vitamin D probably does all that is wanted as regards calcification of cartilage and possibly even bone formation. This is true not only in human rickets but also in the leg weakness of chicks. But other vitamins are necessary for growth, normal development and resistance to infection.

The Minimum Necessary Expenditure on Food

Concern has been expressed whether in the present period of industrial depression the unemployed and the poorer paid workers are suffering from malnutrition—whether their purchasing power is sufficient to procure adequate food for themselves and their families. Socialist politicians who are always bent on increasing the dole regardless of the consequences to the state loudly proclaim that there is considerable malnutrition among the poor. Realizing the national importance of nutrition the British Medical Association set up a special committee to determine the minimum weekly expenditure on foodstuffs that must be incurred by families of varying size to maintain health and working capacity and to construct specimen diets. The committee included such well known dietitians as Dr Robert Hutchinson and Profs S J Cowell and V H Mottram. It placed on record its regret that there exists no satisfactory routine method by which the nutritional condition can be assessed and the observations of different observers compared. The absence of a satisfactory standard of normal nutrition probably explains why so many divergent opinions are expressed as to the nutritional condition. The committee holds that 3000 calories daily in the food as purchased is sufficient for the average man provided his energy output is trifling. In Scotland it was found that 3700 calories was necessary for prisoners doing moderately hard work. It might be argued that the

unemployed man can keep healthy on 3000 calories, but it is held doubtful whether he can maintain working capacity on this, the necessary number lies somewhere between 3,000 and 3,700. As some figure must be taken for purposes of calculation, the committee took 3,400 calories as purchased which should assure 3,000 available calories. The figure is not a minimum nor on the other hand, is it set up as an optimum. It is slightly lower than the 'standard ration' for the army at home stations. The figure taken for an adult woman is 2,840. For children, Cathcart's table was followed. It begins with 1020 for children aged 1 and under 2 years and rises to 3,060 for ages 12 to 14. It is laid down that from 10 to 15 per cent of the daily calories should be derived from protein (about 100 Gm). Of this amount, 50 Gm should be first class (i.e., animal) protein, the other half may come from vegetable sources. The amount of fat daily is laid down as 100 Gm, as much as possible from certain animal sources. The calories can be brought up to the 3,400 by 500 Gm of carbohydrate, the cheapest source possible. With regard to vitamins it is recommended that if there is any doubt as to their sufficiency in the dietary a few drachms of cod liver oil of certified vitamin content be included. This will insure the requisite amount of vitamins A and D.

Examination of working class budgets shows that the average housewife, with no knowledge of dietetics, purchases food which broadly approximates the dietaries of physiologists. When she has not enough money to buy what she wants, she avoids complaints of hunger from her family by buying less of expensive proteins and fats (such as butter) and more of the cheap carbohydrates—bread and potatoes. A common fault in the dietary of young children is shortage of first class protein.

The committee gives a large number of diets suitable for a man, wife and three children aged, respectively, 1 to 2 years, 2 to 3 years and 3 to 6 years. The cost works out at about \$5 a week.

PARIS

(From Our Regular Correspondent)

Nov 6 1933

Congress on Renal Insufficiency

Under the chairmanship of Professor Lemierre, the Congress on Renal Insufficiency met recently at Evian, with an attendance of more than 800. One rarely sees a scientific meeting at which a more complete development of a subject is secured. The subject for discussion was rather restricted, nevertheless, fifteen papers were presented and each one dealt fully with its phase of the subject. Professor Castaigne and Dr S Chamerliac discussed azotemias of extrarenal origin, of which they distinguished three types. Professor Villaret, Justin Bezançon and Rene Fauvert described the mechanical role of the liver in the conveyance and distribution of water through the organism. Mr Isod Bennett of London analyzed the changes in blood calcium occurring in renal insufficiency. He attributed the diminution which is constant to the retention of phosphorus, which develops somewhat parallel to the retention of urea. Mr Guy Laroche dealt with purely azotemic chronic nephritis which he thinks is an indication for a diet low in nitrogen and for diuretic treatment. Professor Merklen of Strasbourg discussed recent research on chlorides in nephritis and the indications for rechloridation which is indicated only in certain cases of acute nephritis with true leukopenia and an elevated or normal alkali reserve. It is indicated in the presence of repeated vomiting and diarrhea and has rendered more service to surgery than to medicine even in the absence of nephritis. A paper by Prof Charles Laubry and Mr Walser on permanent arterial hypertension and disorders of renal functioning was one of the most important presented at the congress. The conclusion reached was that there is no necessary relation between these two conditions. Many cases of hyper-

tension are independent of all renal changes, functional or anatomic. Many renal attacks are not associated with hypertension. There are, however, cases in which the two states coexist, sometimes the hypertension precedes and sometimes it follows the nephritis. Only in the latter event can one speak of the relation of cause and effect, but such cases are rare. To summarize: Hypertension results from multiple causes, the kidneys may contribute to the condition but they cannot produce it by themselves. William S. Hoffman of Chicago considered the mineral metabolism in a number of cases of nephrosic edema and reviewed the relation of the changes in sodium, potassium and chlorine to the water retention and the secretion of urine. The paper of Pasteur Vallery-Radot and Pierre Delafontaine dealt with tests of provoked diuresis in the exploration of renal insufficiency. Paul Savy, Henri Thiers and Rene Peycelon of Lyons gave a critical study on the treatment of anuria due to acute nephritis: intravenous injections of hypertonic solution of dextrose, venesection with transfusion of noncitratated blood, injections of hypertonic solution of sodium carbonate, rechloridation, and renal decapsulation. This was the paper that most interested the Societe des eaux of Evian, which had organized this congress, but the assembled scientists devoted only one paper out of fifteen to this subject.

Congress on Photography in the Sciences

The Association pour la documentation photographique et cinematographique dans les sciences organized a congress, which met, October 7, in the halls of the Musee pedagogique. Photographic and cinematographic documentation are assuming an increasingly important role in biologic instruction. There is scarcely a meeting in which some speaker does not illustrate his paper with a film. Films showing bacteria as the causative agents of infectious diseases are frequently shown to the public, in motion picture houses. Progress has been made in this field by the adaptation of the motion picture to the microscope and this congress furnished abundant proof of that fact. There was also an instructive exhibit of equipment. The congress was under the patronage of Mr. Comandon who made at first film showing the spirochete of syphilis attacking the blood cells. Dr. Clauue and Mr. Jean Painleve, son of the mathematician who became an eminent statesman and whose death has just been announced, promoted the congress. Mr. Comandon, at present attached to the department of inventions, exhibited one of his first films showing, in slow motion, the growth of vegetables. Mr. Yokota of Japan showed the movement of the intestinal contents in animals, the film having been made through an abdominal opening. Mr. Pascalis of Paris showed the technic of immediate reduction of recent fractures. Jean Painleve presented the *Daphnia* and the sea-urchin, showing the possibilities of photomicrography in direct and in indirect light. Mr. Terrien illustrated his operation for cataract, Jacob Sarnoff of New York described, with the aid of a film, cultivation of tissues, de Lee of Chicago illustrated a cesarean operation, Jean Louis Faure explained a subtotal hysterectomy, and Mr. Garrupuy of Toulouse showed a normal confinement and a Porro operation. Delherm, Thoyer-Rozat, Fishgold and P. Godet explained a new method of recording the movements of organs by means of roentgen rays, which enables one to study the heart beat. Dr. Gros of Cambrai spoke on the value of making photographic copies of rare books and protested against the heavy tax imposed on them, which often prevents bringing to the public interesting documents in the libraries.

Death of Professor Calmette

Prof. Albert Calmette, assistant director of the Institut Pasteur de Paris, died, after a brief illness, at the age of 70. He began his career as a ship's physician, then in 1890, he entered the colonial medical service and almost immediately began to

do research in the laboratory of Pasteur, who later sent him to Saigon to establish the first Pasteur institute in Indo-China. Calmette returned to France in 1893 and was appointed director of the Institut Pasteur in Lille, then, in 1919, he became assistant director of the Institut Pasteur de Paris, succeeding Metchnikoff. He was a member of the Academy of Medicine and of the Academy of Sciences and had been honored with the Grand Cross of the Legion of Honor. He was known throughout the world for his magnificent research on antivenom serum and preeminently for the BCG vaccine against tuberculosis. He was occupied, when death overtook him, in studying the effects of cobra venom in infinitesimal doses on experimental cancer. In 1911, he published his *Traite d'hygiene*.

French Congress of Otorhinolaryngology

The French Congress of Otorhinolaryngology was held in Paris. The chairman, Professor Chavanne of Lyons, in his address, emphasized the need of an extensive knowledge of general physiology and pathology in the training of the specialist, and deplored the fact that today diplomas in otorhinolaryngology are bestowed following the completion of short courses of a few weeks. Dr. Lafite-Dupont of Bordeaux presented a paper on the medical and general treatment of acute infections and septicemias in otorhinolaryngology. He discussed the use of serotherapy, vaccines, shock methods, fixation abscess, sodium nucleinate, colloidal metals, soaps, suprarenal organotherapy and radiotherapy, all applied after the focal infection has first been removed as completely as possible and after local vaccination according to the Besredka method. Laval of Toulouse, Barraud of Lausanne, Moreaux of Nancy, Portmann of Bordeaux, Mignon of Nice, and others, presented special communications on the same subject. Louis Leroux, Mr. Baldeux and Mr. Canuyt discussed the interventions in phlegmons of the tonsils and the tonsillar region. Mr. Ramadin presented a paper on the second topic, "Deep Ostetis Petrosa." He discussed the anatomic conditions that favor extension of the infection to the meninges, the possible localization of the ostetis, the habitual slowness of the evolution, and the treatment, which should always be surgical and succeeded by drainage. This paper was followed by a general discussion. Other communications were devoted to posttraumatic deafness (Maurice Bouchet), superior tracheotomy (Gault), early diagnosis of cancer of the esophagus and radium therapy (Gusez), and sinusitis.

BERLIN

(From Our Regular Correspondent)

Nov. 6, 1933

Reorganization of German Spas

Although balneology in Germany is far advanced, there has been a lack of unity in the relations of the scientific societies. It was evident that a reorganization was needed, and Prof. Dr. H. Vogt of Pyrmont was entrusted with the task. The Deutsche Balneologische Gesellschaft, of which Vogt has been made chairman, will bear in the future, the name Deutsche Gesellschaft für Bader- und Klimakunde. It will be the representative scientific organization of the region and will promote balneologic and climatologic science to as high a level as possible. A close contact will exist also with the fundamental branches of medicine. A further task is the supplying of additional training for spa physicians in scientific practical and ethical matters. The annual assemblies will therefore no longer be held in spas or health resorts but in winter (when patients make fewer demands on their time) in association with universities, clinics and hospitals or in collaboration with other large scientific societies. Courses of lectures will be organized in the medical societies of the large cities on balneologic and climatologic subjects. A scientific committee for the advance

ment of balneology and climatology will be created, which will give advice to the directorate in professional matters. The *Ständesverein der reichsdeutschen Badeärzte* will continue to function, likewise the *Deutsche Gesellschaft für Rheumabekämpfung*. The need of greater uniformity and a more centralized organ has given rise to a new journal, *Der Balneologe*, the first number of which will appear January 1 (Prof. Dr. Vogt, editor, Julius Springer, publisher).

Nature Cure Societies and the Medical Profession

The nature cure physicians are coming in the "third reich" more to the front than formerly. Not only have the nature cure practitioners formed an organization characterized by reasonable uniformity with special spokesmen for various specialties, but the new leadership of the medical profession has taken a different attitude toward them (*THE JOURNAL*, December 9, p. 1892). A new decree of the commissar of the public health service of the Free State of Saxony is illustrative of this new trend. "After the victorious triumph of the national-socialist revolution and the assumption of leadership by the national-socialist league of physicians in all questions pertaining to public health, it becomes the duty of the medical profession under national-socialist leadership to study more intensively and in a more scientific manner the theories and teachings of the followers of popular medicine. What previous generations of physicians have neglected, we as national-socialists must seek to remedy. I therefore decree for the members of the national socialist league of physicians of Saxony that they must seek membership in the nature cure associations, homeopathic societies, biochemical societies, Kneipp societies and the like and acquaint themselves in the atmosphere of these societies with the curative methods of popular medicine."

The Age Groups in Health Insurance

According to a report of the federal bureau of statistics, the number of benefit claims of all kinds arising in 1931 in 698 federally organized *krankenkassen* was 1332 for each hundred men and 1421 for each hundred women. Whereas, among the men the youngest age group 14-19 presented claims equal in number to about the average number of members in that group, the next following age groups, 20-24 and 25-29, presented claims equal to 135 and 53 per cent, respectively, in excess of the number of members belonging to those groups. In the age group 30-34 the benefit claims arising during the year were less than the total number of members in that group. From then on there is a gradual reduction, the lowest figures being reached in the oldest age groups 65 and beyond, which lie 120 and 194 per cent under the average number of members. The relatively slow reduction in the 50-65 age group shows an acceleration in the group above 65 years of age. That may be due to the fact that persons who after the age of 65 are still pursuing gainful occupations constitute a group that is in a peculiar manner productive and resistant. The benefit claims presented by the women members of the *krankenkassen* show a similar development but with more marked differences in the various age groups. The age group presenting the largest number of benefit claims does not go so far beyond the average number of members in the group as does the corresponding group among the men but the women of the 20-35 age group report sick more frequently than the average. From then on there is a gradual decline in the number of benefit claims which is interrupted by an increase during the climacteric (50-54 age group). After that the number of benefit claims presented by the women members decline more rapidly than in the men of corresponding age. The number of cases of incapacity for work per hundred benefit claims arising in the various age groups show slight fluctuations other than in the two oldest age groups of the men. In general there were among the men

299 cases of incapacity for work, per hundred benefit claims, and, among the women, 251 cases of such incapacity. Up to age 65, the women presented fewer days of incapacity for work than the men.

According to reports of 166 communal *krankenkassen*, the total number of members as of Sept. 1, 1933, was 4,538,845, of which number 2,422,528 were men and 2,116,317 were women. On that date the percentage of members incapacitated for work was 268, or 231 per cent among the men and 306 per cent among the women.

VIENNA

(From Our Regular Correspondent)

Nov. 3, 1933

Abandons Cutaneous Tests in Hay Fever

At a recent session of the Vienna Medical Society, Dozent Dr. Urbach discussed modern methods of treatment in the troublesome condition known as pollinosis, or hay fever. Successful diagnosis and treatment presuppose an accurate knowledge of the plants of a given region and the time of their florescence. Dr. Urbach recommends the creation of a hay fever calendar in which one can record the time of florescence of all the plants of a given region that are known to be involved in the production of hay fever. The disease-producing substance is the protein contained in the pollen, although some authors contend that it is the fat substance of the pollen. Doubtless the offending toxin is attached chiefly to the globulin. Many patients are affected by the perfumes, or emanations, from the blossoms. It is interesting that hypersusceptibility to pollen is transmissible. In making an examination to discover the specific susceptibility of a patient, Dr. Urbach applies a tampon of cotton saturated with a fresh 20 per cent aqueous pollen extract to the mucosa of the nasal septum and leaves it five minutes *in situ*. He has abandoned the "cutaneous test." If the nasal septum test is positive, an acute catarrhal condition of the nasal mucous membrane, attended with a discharge from the nostrils, develops and continues for from five to fifteen minutes. In central Europe, testing with grass pollen extracts is usually sufficient, in many other regions the pollen of tree, bush and flower blossoms must be included. Dr. Urbach no longer uses for treatment the subcutaneous injection, such as was formerly in vogue, but applies a peroral method. In order that researches in this field may be prosecuted on a large scale, the ministry of agriculture has placed at the disposal of the Vienna dermatologic clinic (where Urbach is carrying on his experiments) a large terrain near Vienna, with many plowed fields in the immediate vicinity, in order that the allergic laboratory of this clinic may obtain sufficient grass and blossom material with which to combat in an active manner this now so frequent disease.

The Treatment of Myoma

In one of the regular lectures at the Vienna 'medical seminar,' Professor Halban described the treatment of myomas that is followed by nearly all the leading gynecologists of Vienna. Speaking generally a much less energetic treatment is applied today to myomas than formerly, for it is now known that they are relatively harmless tumors which frequently occasion little or no discomfort. Only in the event of pronounced indications is active treatment advisable. As such indications may be considered, primarily hemorrhages, menorrhagia or metrorrhagia, in such cases hydrotherapeutic treatment, hot vaginal lavages and ergotic preparations will usually give good results. But if conservative treatment fails a surgical operation or irradiation is to be considered. Professor Halban usually preferring the former. Such an intervention will reveal whether possibly a hidden neoplasm is causing the hemorrhages. In the case of larger myomas curettage is of

no avail, the results are uncertain, and hence it is to be rejected. The statistics for Vienna show, in 2 per cent of the cases, a combination of myoma with carcinoma of the cervix, in 24 per cent, a combination with carcinoma of the corpus uteri, and in 12 per cent, a combination with sarcoma. Pains associated with myoma arise often as a result of tension, pressure or necrosis, which affect the tissues adjacent to the tumors. If conservative methods are not soon effective it is advisable to resort soon to an operation or to irradiation. Fever usually develops when necrotic processes or secondary infections of the myoma nodules appear and it constitutes an indication for operation. The size of the myoma is not usually an indication the essential thing is the amount of discomfort it causes. The situation is different if the myoma is growing rapidly, as this fact justifies the suspicion of a neoplastic degeneration and points to operative removal, even though no essential pain or discomfort is complained of. In spite of multiple and large tumors, conception is possible. Active intervention is therefore necessary only in case a pregnancy is desired but does not occur after a long period and there is no other apparent cause for the sterility. The combination of myoma and pregnancy is not regarded as an indication for operation if the pregnancy is taking a normal course. Only in case pain (through rapid growth of the myomas) or fever (necrosis) occurs should the myoma be removed—possibly in a conservative manner, in order not to embarrass the pregnancy. If the myoma constitutes a hindrance to birth it should be removed intra partum. If the myoma produces a tendency to miscarriage it should be operated on. So called remote effects of a myoma are not infrequent, for instance gastrointestinal disturbances, headache, even epileptiform conditions which completely disappear after an operation. Professor Halban holds the view that it is justifiable to remove myomas if the abdomen must be opened for any other cause provided the intervention is not thereby delayed too long. This indication is applicable especially to women who live in remote regions where suitable aid cannot be promptly secured. These are, then in general the criteria that justify the attending physician in abandoning conservative treatment of myoma. If none of the indications mentioned are in evidence, a myoma should not be operated on or irradiated.

Operation for Endarteritis Obliterans

Thrombo-angitis obliterans or endarteritis obliterans has been but little subjected to operative therapy. Dr. Mandl presented at the last session of the Gesellschaft der Aerzte a patient, aged 34, who for fourteen years had suffered from pain and from intermittent claudication in the left leg. An ulcer appeared which refused to heal, so that a Leriche operation on the femoral artery was performed. Nevertheless amputation of the toes became necessary, and later the lower leg had to be removed. In 1930 the right leg became involved in the same manner. A Leriche operation was performed but the result was not satisfactory. The pulse could be found in the dorsalis pedis only at times, and the pain continued. Dr. Mandl decided to perform a retroperitoneal central sympathectomy operation (after Rovl, Adson-Brown, Stahl). He pushed the abdominal organs to one side also the ureter, and reached retroperitoneally the anterior surface of the vertebral column, where he removed the ganglions of the sympathetic nerve, together with the truncus sympathicus, from the second to the fifth lumbar vertebra. The result after eight months is still excellent: the pulse of the dorsalis pedis is strong and continuous, the trophic ulcer, which had become very large, healed completely within six weeks while the foot is warm. Of course, one cannot speak of a permanent recovery.

During the discussion, Dr. Starlinger of the second surgical clinic reported three cases in which this method of treatment

was applied and in which the results are still good after seven, ten, fourteen and seven months, respectively. He emphasized that in this operation careful hemostasis and ligation of the minute lumbar veins are necessary.

The Increase of Medical Students

The rector of the University of Vienna has announced that the winter semester has brought a marked increase in the number of students. As compared with 1,200 new entrants in the summer semester of 1933, there have been thus far 1,500 new entrants enrolled for the winter semester. The lecture halls are entirely inadequate for the large number of lectures. For instance, the first medicochemical institute which must be attended by the first and second year medical students, can furnish the facilities only by holding an overflow session in another hall, in which the lecture of the professor delivered in the regular auditorium is made available to the overflow session by means of loud speakers, while an assistant performs the corresponding experiments and gives the demonstrations. In spite of warnings the increase in the ranks in medicine are constantly increasing possibly because the other liberal professions offer in our small country still less chance of success. The university authorities are compelled greatly to limit the number of foreign students matriculating for the first two years of the medical course, in order to reserve for Austrian students the facilities in the institutes and the classes in anatomic dissection.

Progress of Cremation in Vienna

In 1922, an ordinance was passed in Vienna permitting human bodies to be cremated instead of being buried in a cemetery. Previously, up to the time of the revolution that grew out of the war ecclesiastical and political considerations had exerted greater influence than arguments based on reason. The first year after the establishment of the Vienna crematory, Feb. 17, 1923, 835 bodies were cremated and the ashes placed in suitable urns. The following year, 1,424 bodies were cremated, the next year, 1,880 and since then there has been a steady increase so that now from 12 to 15 per cent of all dead bodies are cremated or about 3,500 annually. At first the Jewish clergy raised objections to cremation but these objections have been withdrawn. Before a body can be cremated permission must be secured at the central police station, in order to prevent criminals from destroying traces of their crime.

Marriages

WILLIAM RAY MCGINTY, Moultrie, Ga. to Mrs. Myrtle Marsh of Jacksonville, Fla. at St. Augustine, Fla. October 29.

EARL W. BAILLY, Bunker Hill, Ind. to Miss Mildred M. Fish of Toledo, Ohio, in Luckey, Ohio, November 29.

GEORGE GLASGOW CHILES, Sanford, N. C. to Miss Mae McClellan Gilmore of Olney, Md. November 16.

SAMUEL T. BUCKMAN, Wilkes-Barre, Pa. to Miss Catherine Jones of Glen Summit Springs, August 10.

PAUL THOMAS MCBEE, Bakersville, N. C. to Miss Ivy Sandy of Burkeville, Va. October 25.

JESSE MCCALL, Tazewell, Va., to Miss Louise Richardson Pregnall of Richmond, November 18.

HARRY JOHN FAUSEL, to Miss Lydia A. Schmidt both of Chicago at Cincinnati, November 30.

WILLARD B. CARPENTER to Miss Margaret W. Fisher, both of Columbus, Ohio, November 30.

ROBERT DONNELL HAIRE to Miss Mary Ethel Gilbert both of Roswell, N. M. November 14.

WILLIAM E. BROWN to Miss Sara Price, both of Macon, Ga., October 14.

Deaths

Benjamin Franklin Zimmerman, Louisville, Ky, Louisville Medical College, 1901, member of the Kentucky State Medical Association and fellow of the American College of Surgeons, past president of the Jefferson County Medical Society, assistant clinical professor of surgery, University of Louisville School of Medicine, served during the World War on the staffs of the City, Deaconess, SS Marv and Elizabeth hospitals and the John N Norton Memorial Infirmary, aged 60, died, November 10, of heart disease

Samuel Harley Lyle, Franklin, N C, University of Nashville (Tenn) Medical Department 1883, Vanderbilt University School of Medicine, Nashville, 1893 member of the Medical Society of the State of North Carolina, fellow of the American College of Surgeons, president of the Macon Clay Counties Medical Society, formerly member of the county board of education and state legislature, and mayor, proprietor of a hospital bearing his name, aged 72, died, November 14, of heart disease

Harry Burchard Ballou ♂ Mansfield Depot, Conn, University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1905, member of the American Psychiatric Association and the New England Society of Psychiatry, past president of the Tolland County Medical Society, on the staff of the Mansfield State Training School and Hospital, aged 57, died November 27, of myocarditis and angina pectoris

James Cole Hancock ♂ Brooklyn, College of Physicians and Surgeons, Medical Department of Columbia College New York, 1889, member of the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, consulting ophthalmologist to the Brooklyn State and Coney Island hospitals, aged 68, died, November 27 of heart disease

Noble Price Barnes ♂ Washington, D C, Baltimore Medical College, 1893, fellow of the American College of Physicians, formerly associate professor of materia medica and therapeutics, George Washington University School of Medicine, for many years on the staff of the Casualty Hospital, aged 62, died, November 26 of cerebral hemorrhage

Nathaniel Pierce Walker ♂ Milledgeville Ga, University of Georgia Medical Department, Augusta, 1901, member of the American Psychiatric Association past president of the Baldwin County Medical Society, aged 53, for many years on the staff of the Milledgeville State Hospital, where he died, November 20, of pulmonary tuberculosis

Dero Eugene Seay, Dallas, Texas, Vanderbilt University School of Medicine, Nashville Tenn 1896 member of the State Medical Association of Texas and the American Academy of Ophthalmology and Oto Laryngology, fellow of the American College of Surgeons, on the staff of St Paul's Hospital, aged 59 died November 16

Charles Christian Gethman ♂ Eldora Iowa, State University of Iowa College of Homeopathic Medicine Iowa City 1893 past president of the Hardin County Medical Society, member of the city council and school board, formerly county coroner aged 70, died September 3, in the University Hospital, Iowa City, of diabetes mellitus

Ossian J West, Seattle, Willamette University Medical Department, Salem 1889, member of the Washington State Medical Association and the American Society of Clinical Pathologists, formerly on the staffs of the Providence Columbus Minor and Harbor View hospitals, aged 67, died September 17 of hypernephroma

Paul Whitehurst Greene, Retreat, Pa University of Maryland School of Medicine Baltimore, 1900, member of the Associated Anesthetists of the United States and Canada, medical superintendent of the Retreat Home and Hospital for Chronic Diseases, aged 53 died October 29 of chronic myocarditis

Robert John Gardiner, Kingston, Ont Canada Queen's University Faculty of Medicine Kingston 1891 professor of medical jurisprudence and assistant professor of surgery at his alma mater, fellow of the American College of Surgeons, surgeon to the Kingston General Hospital aged 63 died October 31

Eustace Monett Singleton ♂ Marshalltown Iowa Northwestern University Medical School Chicago 1891 member of

the American Academy of Ophthalmology and Oto-Laryngology, physician and owner of a hospital bearing his name, aged 69, died, November 29, in the University Hospital, Iowa City

Walter D Cross ♂ Corsicana, Texas, Memphis (Tenn) Hospital Medical College, 1891, served during the World War, past president and secretary of the Navarro County Medical Society, formerly on the staff of the Corsicana Hospital and Clinic, aged 66, died November 8, of coronary occlusion and arteriosclerosis

James Brew, Nashville, Tenn, University of Nashville Medical Department, 1899, member of the Tennessee State Medical Association, served during the World War, formerly on the staffs of the Protestant and St Thomas hospitals, aged 61, died, November 25, of heart disease

Charles Edward Sayre, Norfolk Neb, Hering Medical College, Chicago, 1894 College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1897, member of the Nebraska State Medical Association, aged 71, died, November 18, of pneumonia

Frank Wise Goodell, Effingham Ill, Butler University Medical Department, Indianapolis, 1880, past president of the Effingham County Medical Society, formerly county coroner, at one time on the staff of St Anthony's Hospital, aged 74, died, November 21

Burton French Weston ♂ Mason City, Iowa, Rush Medical College, Chicago 1891, past president of the Cerro Gordo County Medical Society, on the staff of St Joseph's Mercy Hospital, aged 64, died, November 18, in a local hospital, of acute endocarditis

Adam Elmer Diller ♂ Aurora, Ill Northwestern University Medical School, Chicago 1907, fellow of the American College of Surgeons, on the staff of St Joseph Mercy Hospital, aged 54, died November 30, in the Copley Hospital, of arteriosclerosis

Charles A Wall, Buffalo, University of Buffalo School of Medicine, 1879 member of the Medical Society of the State of New York, past president of the Erie County Medical Society, aged 80, died, November 4, in the City Hospital, of myocarditis

Walter Jones, New York Hahnemann Medical College and Hospital of Philadelphia, 1893, New York Homeopathic Medical College and Hospital, 1896, aged 64, died September 9, in the Morrisania City Hospital, of diabetes mellitus and bronchopneumonia

Edwin S Anderson, Dover, Del, Homeopathic Medical College of Pennsylvania, Philadelphia, 1866, past president of the Board of Homeopathic Medical Examiners, aged 89, died September 21, of arteriosclerosis and chronic interstitial nephritis

Jacob Philip Schneider, Palmer, Mass University of Vermont College of Medicine, Burlington, 1894, member of the Massachusetts Medical Society, for many years chairman of the board of health of Palmer, aged 66, died November 12

William Dewey Wightman ♂ Los Angeles, Northwestern University Medical School, Chicago, 1926, member of the Associated Anesthetists of the United States and Canada, aged 35 died, December 6 of a self inflicted bullet wound

George Leon West ♂ Newton, Mass, Harvard University Medical School Boston 1894, member of the board of health of Newton, aged 65 on the staff of the Newton Hospital where he died November 18 of heart disease

Frank P McKinstry, Washington N J, Hahnemann Medical College of Philadelphia, 1878, member of the Medical Society of New Jersey past president of the Warren County Medical Society, aged 78, died November 23

Louis Audenried Salade, Central Point Ore, University of Pennsylvania School of Medicine, Philadelphia, 1888 aged 69 died November 14, in the Medford (Ore) Hospital, of ruptured appendix and intestinal obstruction

Howard C Silver, Baltimore University of Maryland School of Medicine, Baltimore, 1888 aged 73, died October 22 at the Church Home and Infirmary, of arteriosclerosis, coronary thrombosis and angina pectoris

William Abner Wakeley ♂ Orange, N J, New York Homeopathic Medical College and Hospital 1868 formerly on the staff of the Orange Memorial Hospital aged 70, died, November 17 of cerebral hemorrhage

William David Senn, Newberry S C, Medical College of the State of South Carolina Charleston 1886 member of the South Carolina Medical Association aged 74 died suddenly November 23 of heart disease

George Clinton F Williams, Hartford, Conn., University of the City of New York Medical Department, 1878, since 1920 president of the state board of public welfare, aged 76, died, November 15, of myocarditis

Roger Williams, Los Angeles, Jefferson Medical College of Philadelphia, 1877, member of the Medical Society of the State of Pennsylvania, aged 83, died, November 20, at Upland, Calif., of cardiorenal disease

Hermann W Strosser, New Britain, Conn. (licensed, Connecticut, 1893), member of the Connecticut State Medical Society, on the staff of the New Britain General Hospital, aged 72, died, November 5

John C Twitty, Rutherfordton, N C., Baltimore Medical College, 1892, member of the Medical Society of the State of North Carolina for many years county health officer, aged 64, died, November 6

Andrew H Cowie, Flint, Mich., Saginaw (Mich.) Valley Medical College, 1899, member of the Michigan State Medical Society, aged 65, on the staff of the Hurley Hospital, where he died, November 24

Oscar Herman Hahn ♂ Hastings, Neb., Ensworth Medical College, St Joseph, Mo., 1908, on the staff of the Mary Lanning Memorial Hospital, aged 48, died, November 23, of cerebral hemorrhage

William A Adair, Moscow Idaho, Fort Wayne (Ind.) College of Medicine, 1883, member of the Idaho State Medical Association, formerly city and county health officer, aged 75, died, September 24

Thomas Edward Duffee ♂ Pawtucket R I University of Vermont College of Medicine, Burlington, 1903, aged 61, died, November 10, in the South County Hospital, Wakefield of pneumonia

John Francis Corbin, Galesburg, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898, aged 63, died, December 1, of bronchitis

George William Dippel ♂ Pittsburgh Western Pennsylvania Medical College, Pittsburgh 1902 aged 54, died November 1, in St Francis Hospital, of acute myelogenous leukemia

William J Weindel, Marion, Va., Kentucky School of Medicine, Louisville, 1897, member of the Medical Society of Virginia, aged 58, died, September 7, of carcinoma of the stomach

Ole E Robinson, Independence, Kan. Keokuk (Iowa) Medical College, College of Physicians and Surgeons 1901 member of the Kansas Medical Society, aged 56, died, November 13

Morton William Fraser, Woodlake, Calif., Hahnemann Medical College of the Pacific, San Francisco, 1914, member of the California Medical Association, aged 47, died, October 5

Frank Carlton Williams, Syracuse, N Y., University of Michigan Medical School, Ann Arbor, 1883 aged 75, died November 20, of cerebral hemorrhage and chronic myocarditis

Albert Andrew Guffey, McKeesport, Pa., Western Pennsylvania Medical College, Pittsburgh, 1897, member of the school board, aged 65, died, October 1, of diabetes mellitus

August Carl Bothe, San Francisco, College of Physicians and Surgeons of San Francisco, 1899, aged 67, died, October 23, of carcinoma of the sigmoid and diabetes mellitus

Frederick Samuel Pope, Santa Ana, Calif., Trinity Medical College Toronto, Ont., Canada, 1898, member of the California Medical Association, aged 65, died, October 19

Joseph Allen Wright, Covington, Ga., University of Georgia Medical Department, Augusta, 1879, also a druggist, aged 80, died, August 20, in a hospital at Atlanta

Oscar Victor Lawson, San Francisco, Illinois Medical College, Chicago, 1899, aged 62, died, July 13 in the Agnew State Hospital, Agnew, of chronic myocarditis

Frederick Charles Gray, Bayonne, N J. Hahnemann Medical College and Hospital of Philadelphia, 1896, aged 63, died, November 22, of cerebral hemorrhage

Sheftel Jacob Elner, Chicago, University of Illinois College of Medicine, Chicago, 1913, aged 63, died, November 24 of coronary occlusion and angina pectoris

Reinhart L Hild ♂ St Louis, Homeopathic Medical College of Missouri, St Louis 1909, aged 65, died, November 19, of myocarditis and coronary thrombosis

Rosa Engelmann, Pasadena, Calif., Woman's Medical College, Chicago, 1889, aged 73, died, September 2, at the Las Encinas Sanitarium, of carcinomatosis

Albon Ellsworth Bartoo, Pomona, Fla., University of Buffalo (N Y) School of Medicine, 1889, aged 71, died November 30, of heart disease

Louis Fowler Joy, Fulton, N Y., Long Island College Hospital, Brooklyn, 1897, aged 62, died, September 9, in Syracuse, of angina pectoris

Ormond Pinkerton Paulding, Santa Maria, Calif., University of Michigan Medical School, Ann Arbor, 1875, aged 88, died, October 21

Theodore E Bryant, Houston, Texas, Meharry Medical College, Nashville, Tenn., 1900, aged 58, died, August 25, of cerebral hemorrhage

Joseph Newell Sipher ♂ Medina, Ohio, University of Wooster Medical Department, 1885, aged 71, died, October 15, of heart disease

Edward Preval Rice, Augusta Ga., University of Georgia Medical Department, Augusta, 1901, aged 52, died, October 18, of heart disease

Mactier Warfield, Baltimore, University of Maryland School of Medicine, Baltimore, 1884, aged 75, died, November 2 of carcinoma

James K Barlow, Savannah, Tenn. University of Louisville (Ky.) School of Medicine, 1875, also a dentist, aged 82 died November 11

Bloom Warren Ganoung, St Louis University of Buffalo School of Medicine, 1885, aged 74, died suddenly, November 9, of heart disease

William C Bilbro, Nashville, Tenn. University of Maryland School of Medicine, Baltimore, 1884, aged 70, died November 28

Elizabeth W Griscom, Berkeley, Calif. Woman's Medical College of Pennsylvania, Philadelphia, 1887, aged 85, died, September 26

Elbert W Ross, Sugar Grove, Va. (licensed, Virginia, by exemption, under the Act of 1895), aged 67, died, November 5, of pneumonia

James Austin Payzant, Vancouver, B C, Canada, College of Physicians and Surgeons, Baltimore, 1884, aged 76, died recently

Herbert Lucius Stebbins, Los Angeles, University of Vermont College of Medicine, Burlington, 1884 aged 74, died, September 4

James Wesley Shrout, Shirley, Ind., Bennett College of Eclectic Medicine and Surgery, Chicago, 1897, aged 59 died November 9

Fred Sargeant Crocker, Chicago, Rush Medical College Chicago, 1897, aged 63, died, November 30, of cerebral hemorrhage

Elmer Thomas White, Chicago Homeopathic Hospital College Cleveland, 1883, aged 71, died, December 2, of chronic myocarditis

Oscar Vincent Everett, Long Beach, N Y University of the City of New York Medical Department, 1892, died September 11

Ada M Lamson, Lima Center, Wis., Chicago Homeopathic Medical College, 1881, aged 75, died, August 7, of carcinoma

Levi Dungan Hurd, Jackson, Ohio, Starling Medical College, Columbus, 1903, aged 57, died, October 29, of a tumor of the neck

Charles Baird Oliver, Chatham Ont., Canada, Trinity Medical College, Toronto, 1890 aged 67 died, November 19

Wilson I Gautier, Athens W Va., Maryland Medical College, Baltimore, 1904, aged 72, died, August 10, of nephritis

David H Keller ♂ Bangor, Pa., Columbus (Ohio) Medical College, 1882, aged 72 died, November 22, of heart disease

Frank Taliaferro, San Diego, Calif., Jefferson Medical College of Philadelphia, 1875, aged 84, died, October 22

Robert James Prather, Dallas, Texas (licensed, Mississippi, 1897), died, in November, of cerebral hemorrhage

Earnest E Murray, Escondido Calif., American Medical College, St. Louis, 1887, aged 70 died, October 26

John Gilbert Grim, La Habra Calif., Medical College of Ohio, Cincinnati, 1881, aged 74, died, October 6

J F Hendricks, Merkel, Texas Atlanta Medical College, 1883, aged 79, died, October 27 of senility

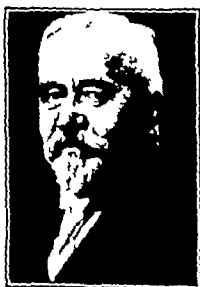
Correspondence

THE DEATHS OF CALMETTE AND ROUX

To the Editor—Within but a few days' interval the illustrious Institut Pasteur at Paris has lost its two most distinguished leaders. On October 29, Prof. Albert Calmette died at the age of 70 years and on November 3, Dr. Emile Roux, director of the institute, died at the age of 79 years. This double loss to medical science can be fully grasped only by those interested in the progress of science. By their personal charm and creative genius they seemed surrounded by a preciousness wholly different from that of other mortals.

Professor Calmette's keen intelligence was clearly portrayed in his distinguished looking face. But rarely is one fortunate to encounter such mild and radiant eyes. Pure goodness shone through them and betrayed the presence of an even and placid conscience. Always modest and quiet in his manners, he seemed to exist solely for the interests of science and the welfare of humanity. At all times tactful and exceedingly polite, he presented the type of Frenchman foreigners but rarely encounter and the impression of whom is destined to linger in their mind as something worthy of reverence and praise. His immense service in the interest of science was so ideally matched with an almost excessive modesty that the memory of him will always remain a source of inspiration to those who were privileged to know the man intimately as scientist, humanist, master and friend.

Professor Calmette was director of the Institut Pasteur at Lille during the entire German occupation of that city between 1914 and 1918. His arrest was repeatedly proposed, but the enemy openly admitted that his charming deportment exonerated him completely of any guilt and they allowed him to pursue his medical investigations undisturbed on the one condition that he did not quit the city. By the command of General von Gravenitz, Mme. Calmette was carried away as a hostage to a distant prison camp at Hanover. During this cruel ordeal, Calmette was not allowed any news, either from his imprisoned wife or from his officer son, who fought at the front with the French artillery. During the recent tragedy at Lübeck, in which more than seventy children died following vaccination with a contaminated BCG vaccine, said to have come from Calmette's laboratory and subsequently adjudged by the superior court at Leipzig to have been ill prepared by the German bacteriologists at Lübeck, Calmette commented with remarkable evenness of mind on the cruel assaults made against his character by certain German scientists. "Nobody



Albert Calmette

can fully comprehend the moral torture inflicted on me by this unfortunate tragedy, but I desire to exonerate German science—so preeminent in every sphere—of any blame which needs must fall on the shoulders of certain individuals. At no time during this tragic display of bitter feelings across the Rhine was any bitterness detected in this great and placid scientist, although his friends were fully aware of the fact that behind Calmette's serene outward appearance there resided an exquisite sensibility—indeed a fitting attitude to assume by the man who had been privileged to give the world the antivenom serum which already has saved thousands of lives and who now in later years had succeeded in the development of a method which re-aroused world interest in the eradication of tuberculosis.

Dr. Roux presented an essentially different type of personality. Should one come across Dr. Roux during his walks

through the gardens or the corridors of the Institut Pasteur and without knowing the man, instinctively one would ask himself, "Who is this queer old man?" Here he wandered to and fro as a daily routine, old and gray and poorly clad, stoop shouldered and withal a pathetic, sallow-jaundiced complexion. Perforce he conveyed the impression that being alive was to him a source of grief. But behind this pitiable outward frame hid a highly critical and richly endowed scientific personality, which for the past nineteen years has reverently and sagaciously directed the destiny of the world's most illustrious and important center for medical research.

Dr. Roux was popularly best known for his discovery of the diphtheria toxin and the subsequent preparation of the diphtheria antitoxin. But in spite of an immediate and universal recognition as one of the world's foremost savants, he remained excessively modest. For years he occupied small quarters in the garden of the Institut Pasteur, which served him as office and living room. One was surprised to find in his living room an unpainted wooden table, a few simple chairs and an iron bed of the conventional hospital design. Aside from another small table, loaded down with books and papers, his living quarters were frugally bare. He spent the early part of every morning with the institute superintendent and the remainder of the day with studies and medical research. This routine was assiduously followed year after year without interruption for any vacation. Now and then his closest friends would succeed in luring him to the country, but here he soon became fidgety and longed to return to the institute. He nearly attained the age of 80. Had he but spared his efforts he would easily have reached the nineties, for he was endowed with a strong body in spite of its outward frail appearance. He rarely visited the homes of friends and colleagues and religiously refused to accept invitations to mingle with high society. On rare occasions he attended the sessions of the Académie de médecine. He refused to accept the salary to which he was entitled as director of the institute. "I really don't need the money," he said, "and they give me board, room, light and heat, and whenever I become hungry the maid brings me food. The Institut Pasteur needs the money worse than I do." When he was called out to attend to professional duties in rain or in inclement weather, he was always seen to turn up the collar of the overcoat in hastening to catch the nearest autobus or street car. He would not make use of an automobile. "An auto costs too much and we need the money for scientific work."

His extreme modesty and frugality knew no limits. Science and hard work were to him the two most important things in life. The enormous investigations which Dr. Roux was able to accomplish in the interest of medical science are so extensive that only the expert is aware of their importance. Only a few days before his death, he was told of the passing away of his old friend and colleague Calmette. He became deeply moved by this sad news and repeatedly asked whether the laboratories of Calmette were adequately taken care of. While he himself was struggling with death his thoughts centered about the enormous loss to the institute by the untimely death of Calmette, whom he had wished to become his successor as director. When he was apprised of the earnestness of Calmette's associates to carry on the work in the spirit of their departed master, his peace of mind was restored.



Pierre Paul Emile Roux

These two eminent savants have shed a luster over French science as few others have been privileged to do since the heroic years of Louis Pasteur. They have served their country and the world faithfully and unselfishly. Modestly and devotedly they have labored for the good of humanity in times when so many forces were at play to destroy our noble heritage of civilization, by every possible means of disillusionment and political strife.

KONRAD E. BIRKHAUG
Institut Pasteur
Paris

USE OF SALINE IN SOLUTIONS FOR LOCAL ANESTHESIA

To the Editor—In a recent review of my book on local anesthesia (*THE JOURNAL*, October 28, p. 1418) I am criticized for not advocating the use of physiologic solution of sodium chloride in making up the anesthetic solution. Why should one use it in making up anesthetic solution? I have tried about all the various mixtures advised for the making up of anesthetic solutions in the clinic, in my leg, and in bunnies and bow-wows. There is no difference in the "feel" injected in one's own skin and slides of animal tissue show no injury when plain tap water is used. Clinical experience convinces me that anesthesia is more prompt when a hypotonic medicine is used. Wise boys tell me that theoretically a hypotonic solution is more quickly absorbed than an isotonic or a hypertonic one. Be it remembered that after one dissolves a few tablets of procaine in an isotonic solution it becomes hypertonic. Put into a rabbit's abdominal cavity a procaine solution in water is absorbed more rapidly than is one made up with physiologic solution of sodium chloride. What one wants in local anesthesia is for the tissues to drink up the solution as rapidly as possible. Besides, a saline solution cannot be made in the operating room. If my hospital was located in the middle of the Pacific Ocean I would catch rain water for the making of my procaine solutions. Why should one use physiologic solution of sodium chloride for making up our anesthetic solution? I really want to know.

ARTHUR E. HERTZLER, M.D., Halstead, Kan.

[NOTE—The letter was referred to the reviewer of Dr. Hertzler's book, who writes.]

To the Editor—There can be little doubt that tap water is not the optimal or even desirable solvent for anesthetic drugs. Braun showed as early as 1898 that, when salt solutions of various concentrations are injected intradermally, pain followed by anesthesia results. With sodium chloride solutions between 0.6 and 2.5 per cent an indifferent zone exists in which neither irritation nor anesthesia of the dermal wheal is detectable. Later, with the help of freezing point determinations, the optimal, isotonic concentration of 0.9 per cent sodium chloride was advised. It has been erroneously thought that, by adding the procaine salt to this solution a hypertonic concentration results. Procaine hydrochloride is freely dissociated in the salt solution, and when it mixes with buffer solutions of the tissues it completely dissociates into the procaine base and is lipid soluble (Gros, 1910). Thus osmotic pressure of the procaine salt is negligible and the salt can be dissolved in physiologic solution of sodium chloride without becoming hypertonic.

Procaine hydrochloride dissolved in tap water may produce anesthesia slightly more rapidly because in the first place, tap water and distilled water as used by Potain (1869) and Dieulafoy (1870) has well known anesthetic properties which follow an initial burning. This initial burning is naturally abolished by the presence of procaine. Another reason for a more rapid anesthesia with tap water is its increased alkalinity (Chicago tapwater has a pH of about 6.8) compared with a

procaine solution dissolved in physiologic solution of sodium chloride, which has a pH of around 4.85 to 5. That alkaline solutions act more rapidly because of the increased hydrolytic dissociation of the procaine base has been universally accepted as a fact.

For these reasons it is quite understandable that the procaine tap water solution may act faster, although how much faster it acts has not been stated, and from my personal experience the difference, at least in infiltration anesthesia, cannot be great. When "wise boys" have informed Dr. Hertzler that the hypotonic solutions are more rapidly absorbed, they have lost sight of the fact that the anesthetic action of procaine on nerve endings, nerve fibers and cell membranes will depend on its absorption as a base to the lipid film with which they are covered.

From clinical experience it can be stated that procaine tap water or procaine distilled water solutions produce persistent edema, induration or, under unfavorable circumstances, even necrosis. Poorly vascularized subcutaneous fat, when injected (and not overinfiltrated) with procaine tap water, may disrupt the fat cell and leak through the incision for weeks. It is unnecessary to say that not only the fat cell ruptures in the presence of such a hypotonic solution but also the red cell hemolyzes and that in thin skinned individuals a permanent brownish induration will testify to this effect. Dr. Hertzler states that slides of animal tissue show no injury when tap water is used. If that is so, the tissue injected must have been muscle and not subcutaneous fat. And when peripheral nerves are brought in contact with strongly hypotonic solutions, they may suffer irreversible damage. French surgeons in the second half of the nineteenth century injected distilled water freely into sciatic nerves resulting in relief from pain and an occasional foot drop. In performing a nerve block, the use of isotonic solutions is even more important than in infiltration anesthesia.

If Dr. Hertzler's clinic was located in the middle of the Pacific Ocean he could still get a little salt from his cook, unless he believed in a salt-free diet.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

THE COMPLEMENT FIXATION TEST FOR AMEBIC DYSENTERY

To the Editor—We have been requested by the United States Public Health Service to examine all our dining car and restaurant employees to pick up if possible cases of dysentery that might have arisen at Chicago. We are actively cooperating in this work and I have learned very indirectly that there is a Craig test for dysentery but do not know anything definite about it. If you can give me references or lend me reprints I shall be much indebted.

J. M. WAINWRIGHT, M.D., Scranton, Pa.

ANSWER—Col. Charles F. Craig, U. S. Army, retired, and now director of the Department of Tropical Medicine of Tulane University School of Medicine, New Orleans, has done an enormous amount of clinical and research work on amebic dysentery, one phase of which has been the development of a complement fixation test for the diagnosis of amebiasis which, he believes, has practical value as a diagnostic method. The technic of this test is practically the same as that of the standard method of performing the complement fixation test for syphilis used in the U. S. Army laboratories. The chief difference in the technic of the two tests is in the preparation and titration of the antigen used. Craig uses an alcoholic extract of cultures of *Endamoeba histolytica* grown on a modified Boeck-Drbohlav medium. He takes a rich culture of this organism grown on the medium and develops subcultures until there are available at least 120 cultures of the organism for extraction with absolute alcohol. It is necessary to use great care in titrating this antigenic extract for hemolytic qualities, anticomplementary

qualities and antigenic strength. The technic of the test is important and should be attempted only by a trained serologist. The use of the undiluted alcoholic extract of *Endamoeba histolytica* as the antigen makes the test very delicate and subject to extreme error unless the exact technic is followed. The practical value of the test therefore, is limited particularly by the difficulty of preparing and titrating the antigenic extract. Craig described his technic in the September, 1929, issue of the *American Journal of Tropical Medicine*. He reported in this article some of the results he obtained with the test. In the June, 1933 *Journal of Laboratory and Clinical Medicine* he described further observations on the test and reported results obtained in testing 1,000 persons. The test, he says has proved of value in the diagnosis of cases of amebic abscess of the liver unaccompanied by intestinal symptoms also in the diagnosis of apparently healthy "carriers" of *Endamoeba histolytica*, and of those presenting mild symptoms of infection also in the control of antiamebic treatment. The strongest positive results are usually obtained with the test in carriers who have no symptoms of amebiasis or in persons who have mild symptoms of the infection. In some severe cases of acute amebiasis he found the reaction doubtful or negative although in most severe cases the reaction was positive. Persons infested with other species of ameba or with the intestinal flagellates do not give positive complement fixation with this test unless *Endamoeba histolytica* also is present. Normal persons or those ill with other diseases do not give a positive complement fixation reaction unless they also harbor *Endamoeba histolytica*. The specific complement fixing bodies disappear from the patient's blood serum following antiamebic treatment and the disappearance of *Endamoeba histolytica* from the feces. In relapsing cases of amebiasis, the test which has been negative during the interval of apparent freedom from ameba again becomes positive some times even before the parasite is again demonstrable in the feces. Unless repeatedly negative for several weeks, therefore a negative reaction does not prove the absence of amebic infection or that antiamebic treatment has resulted in a cure.

In his article in *THE JOURNAL* July 5, 1930, on the diagnostic value of the complement fixation test in amebic infections, Craig noted that Izar in 1914 used an aqueous antigen prepared by extracting fecal matter containing *Endamoeba histolytica* and liver abscess pus. Others endeavored to confirm Izar's report and were not able to obtain consistent results owing to the weakness of the antigenic extract. Craig believes that by his method an antigen can be prepared which is strong enough to react in the majority of patients infected with *Endamoeba histolytica*.

AMEBIC DYSENTERY IN A CHILD

To the Editor—Would you kindly outline specific treatment for an 8 year old girl with clinical amebic dysentery of four months standing? Please omit name. MD Illinois

ANSWER—In the first place it is necessary to be certain that the child has the pathogenic ameba *Endamoeba histolytica*. Secondly, the extent of tissue damage present particularly of the heart, liver kidneys and lower bowel determines the drug of choice in amebiasis. The child's weight is not given. Assuming that she is suffering from acute dysentery the patient should be given bismuth subcarbonate (the subnitrate should not be used see Roe H E. Methemoglobinemia Following the Administration of Bismuth Subnitrate *THE JOURNAL* July 29 1933 p 352) in one fourth to one-half teaspoonful amounts every time she has a diarrheal or bloody movement. If the liver and kidney function is not impaired she may be given carbarsone (Reed A C Anderson H H David N A and Leake C D. Carbarsone in the Treatment of Amebiasis *THE JOURNAL* Jan 16 1932 p 189) in divided amounts orally not exceeding a total of 300 mg per kilogram over a month's period. The drug may be used also as a retention enema in double this total dosage provided rest periods of a week to ten days are allowed between courses to allow for arsenic excretion. (Reed A C and Leake C D. The Treatment of Amebiasis with Iodochlorhydroxyquinoline *THE JOURNAL* May 27 1933 p 1658) may be given in the same amount orally but is not recommended for rectal use because it causes local irritation. Carbarsone has an additional advantage because of its definite tonic action. (Correspondence *THE JOURNAL* Dec 2 1933 p 1819). Emetine hydrochloride may be used subcutaneously in a total amount not exceeding 10 mg per kilogram if there is an amebic hepatitis or hepatic abscess and provided the heart is watched for evidence of possible injury. The diet should be smooth rich in protein and low in starch content. Members of the child's household should be examined in order to make certain that reinfection does not occur.

AMEBIC DYSENTERY IN PREGNANCY

To the Editor—I have a patient who is pregnant and has amebic dysentery. Kindly send me an article or articles pertaining to this subject the treatment being the question in mind without interfering with the pregnancy. REO M SWAN MD Cambridge Ohio

ANSWER—The patient should be confined to bed and given 0.065 Gm (1 grain) of emetine hydrochloride each day hypodermically and this dose repeated for five or six days. Chinofon should then be given in a dose of 0.75 Gm (12 grains) three times a day for a period of eight days. If this dosage of chinofon causes severe diarrhea after the first two days on which it is taken the dosage should be reduced to 0.5 Gm (8 grains) three times a day. During the treatment the diet should be liquid or semiliquid.

DILAUDID

To the Editor—What is the latest on dihydromorphine hydrochloride five times the potency of morphine non habit forming probably less nauseating originated in the Knoll Laboratories in Germany? Please omit name. MD Texas

ANSWER—Dilaudid is capable of producing the effects of morphine in possibly one-third the dose but it is of questionable advantage, as it is evidently habit producing, several cases of dilaudidism having been observed.

FOSHAY SERUM FOR TULAREMIA

To the Editor—I have a case of tularemia in a woman aged 45. The blood test was positive in a dilution of 160 about the twelfth day of the disease. The manifestations are of the ulceroglandular type with an ulcer on the right index finger and involvement of the regional glands along the biceps and in the axilla. The case is running a comparatively mild course and the temperature is now normal at the end of three weeks. The glands however are still swollen and quite tender although they have not yet broken down. The only definite treatment which I have been able to find in the literature is Foshay's serum and Fisher's article in the *Journal of the Indiana State Medical Association* recommending the use of neosarsphenamine. The statistics on these methods of treatment are very meager and I will greatly appreciate it if you will give me any further information you may have on any specific treatment. Is Foshay's serum available on the market if so where can I obtain it? CLARKE ROGERS MD Indianapolis

ANSWER—The antitularemia serum developed by Foshay appears to exert a specific curative effect in cases of tularemia (see Foshay, Lee. An Antiserum for the Treatment of Tularemia *THE JOURNAL*, Nov 4 1933, p 1447). The serum is not available at the present time through trade sources but may be obtained directly from Dr Lee Foshay, Cincinnati General Hospital, Cincinnati.

RECTAL GONORRHEA

To the Editor—What is the best treatment for rectal gonorrhea in a woman? Please omit name. MD, West Virginia

ANSWER—Gonorrheal proctitis is treated daily with a cleansing tapwater enema followed by an instillation of one pint of 1:4000 potassium permanganate, as a retention enema. An occasional oil retention enema may be used. In addition, measures are necessary to eradicate the focus from the genital tract. The cervix in the acute stage is treated with applications of either 2 per cent mercurochrome or tincture of iodine and alcohol. Douches are prohibited.

In the chronic stage cauterization of the cervix with the actual cautery is the procedure most commonly practiced. Not to be forgotten is the treatment of the urethra and Skene's glands by massage and instillations of mercurochrome or silver salts. Condylomata acuminata are treated with the silver nitrate stick or the actual cautery.

PROTRACTED PASSIVE HYPEREMIA IN CARDIAC DECOMPENSATION

To the Editor—From my limited clinical experience and library I am unable to ascertain the exact pathologic changes that would take place in an organ when the veins draining the blood from it are constantly partly obstructed in other words when the organ is constantly engorged with venous blood. Information will be thankfully received.

RUSSEL GWINN MD Missoula Mont

ANSWER—The condition described is practically that occurring in protracted passive hyperemia in cardiac decompensation. The changes depend on the degree of obstruction and the structure of the organ, especially the blood supply. In the liver which receives relatively little arterial blood, venous stasis leads to marked asphyxia which results in death and absorption of the functional liver cells receiving the least oxygen namely those in the center of the lobule. Thus a

large proportion of the liver tissue may be lost, its place being taken by dilated blood channels and sometimes to a slight degree by fibrous tissue. On the other hand, an organ receiving much more arterial blood than is required for its mere nutritional needs, such as the kidney, exhibits but little structural change from ordinary degrees of venous engorgement, although its functional activity is decreased in proportion to the decreased blood flow through its secretory elements. In the lungs, because of their structure, diapedesis and repeated capillary hemorrhages lead to iron pigmentation and some fibrosis, whereas in the spleen a diffuse increase in fibrous and elastic elements are the chief effects.

OTOSCLEROSIS AND ALOPECIA

To the Editor—Will you kindly outline an investigation in an effort to discover the cause of otosclerosis in a man aged 23? What is the status of the treatment of otosclerosis with parathyroid gland in an effort to decalcify the bones of the middle ear? What is the status of the treatment of the various forms of alopecia with pituitary extract? Please omit name. M D Arizona

ANSWER—Up to the present, the actual cause of otosclerosis has not been determined. There have been many theories of the etiology of this condition, and one of these holds that it is due to a disturbance of the endocrine glands. Though nothing positive has been determined, it is well known that there is a definite tendency to hereditary transmission that the condition usually develops in early life, and so on. The *Transactions of the American Otological Society* for the past few years have contained reports of the Committee on the Investigation of Otosclerosis. Funds are allocated to several investigators in this country and in Europe, so that the etiology and pathology of this disease are being attacked on many sides. However, no positive results have thus far been obtained. So far as known, the parathyroid gland has had no effect on the calcification of the bones of the middle ear. As a matter of fact otosclerosis is really an otospongiosis, usually in the region of the foot plate of the stapes, and does not involve the other bones of the middle ear.

It has not been definitely demonstrated that pituitary extract has any beneficial effect on alopecia except in a few cases in which there was apparently some definite deficiency of the pituitary gland.

HERPES SIMPLEX

To the Editor—A man aged 33 well nourished and well developed whose tonsils and adenoids have been removed and whose teeth have been roentgenographed without discovery of infection for the past eight years has had herpes of the lips and dryness of the skin of the face as well as herpes on the upper lip and close to the mouth and herpes in the arch of the left foot. Genitourinary and gastro-intestinal examinations are negative. The lungs and heart are normal. He had 125 skin allergy tests which were all negative. The face herpes comes in cycles of from seven to ten days. In a chronic case of this type what else should I look for as a cause and what internal treatment is usually indicated?

RUSSELL L. HODGE North Kansas City Mo

ANSWER—Herpes simplex is caused by one of the filtrable viruses, which apparently lies latent in most persons, becoming active when resistance is lowered from any one of many causes. Recurrent herpes simplex is supposedly due to the same cause but explanation of its cyclic recurrence is difficult. Many methods of treatment have been used with success. Calcium lactate, from 2 to 5 Gm., dissolved in hot water, three times a day after meals is often valuable. It may well be supplemented by injections, intravenous or intramuscular of calcium gluconate from every three to five days.

Intramuscular injections of the patient's own blood from 5 to 15 cc every five days, is recommended.

Vaccination with cowpox vaccine, repeated, if necessary, has been helpful.

Ultraviolet ray exposures over the area in which the herpes recurs is recommended. Roentgen treatment, one fourth erythema dose once a week, is highly commended. A course of insulin has been reported as successful, as has the use of cinchophen.

Herpes in the arch of the foot is possible, but ringworm in this area is much more probable. If, on examination of the tops of the vesicles after they have been soaked in 10 per cent potassium hydroxide for from two to seventy-two hours, a fungus is found the lesions should be painted daily with tincture of iodine until they dry up, and then an ointment of 3 per cent salicylic acid and 6 per cent benzoic acid in ointment of rose water should be applied once a day for at least a month after the lesions have disappeared.

BILATERAL CRYPTORCHIDISM AND FACIAL TIC

To the Editor—I have an 11 year old boy with bilateral cryptorchidism who for the past year or so has been developing a tic of the neck and face muscles. The testicles are felt in the inguinal canal and cannot be made to enter the scrotum. In view of the attending psychoneurosis which is becoming more marked should I insist on operative measures to transplant one or both testicles? Do you think the condition of the testicles is a factor in causing the nervous symptoms at this age? What operation would be advisable and from statistics what percentage of cures should one expect? Please omit name and address. M D New York

ANSWER—This patient evidently has two distinct conditions first, a bilateral cryptorchidism, and, second, a tic of the neck and face muscles. In view of the fact that the boy is 11 years old and because both testicles can be felt in the inguinal canal the advice that the patient should be operated on is justified. The two testicles should be transplanted into the scrotum at the same time. The operation, if correctly performed, is successful and the patient is cured in every instance.

The tic in the muscles of the neck and face has nothing to do with the cryptorchidism and therefore will not be influenced by the operation. This requires separate treatment by a neurologist.

RECURRENT SWELLING OF LIPS

To the Editor—I have a patient a man about 55 years of age, whose upper lip swells very much occasionally several times a year. Yesterday the patient awoke with the upper lip greatly swollen and about noon it went down and the swelling shifted to the lower lip. This change was very rapid occurring in about an hour. The patient had his upper lip swell when he was a small boy and says that he was treated for worms. Once in a while he suffers terrible itching in the anus and it swells internally and almost closes up. A purgative relieves this condition. Will you please give a diagnosis and treatment? Kindly omit name.

M D South Carolina

ANSWER—From the history, this patient has recurring swellings of the lips similar to a group of cases described in *THE JOURNAL* by Drs. New and Kirch, April 22, page 1230. The condition is similar to what is known as angioneurotic edema, and permanent enlargement of the lips may result. The treatment suggested is the injection of boiling water in multiple areas about the lips and the use of radium externally with distance and screening.

B. ACIDOPHILUS IMPLANTATION

To the Editor—1 Is it possible for an anhydrous milk preparation to contain the living organisms of acidophilus bacilli? 2 What is the minimum number of acidophilus bacilli that must be ingested daily in order to have an acidophilus bacillus implantation take place in the colon? Kindly omit name. M D, New York

ANSWER—1 An anhydrous milk might possibly contain some living acidophilus bacilli but in the ordinary process of preparation and handling of dried milk their occurrence is not at all likely.

2 It is difficult to state the minimum number of living acidophilus bacilli that is necessary for implantation. Bacillus acidophilus milk should contain at least 100,000,000 viable organisms per cubic centimeter, and from a pint to a quart of such milk is required daily to effect results.

DISAPPEARANCE OF SPERM AFTER VASECTOMY

To the Editor—A North Dakota physician asks how long it takes for spermatozoa to disappear from the semen after a bilateral vasectomy. Your answer is that one or two ejaculations should be sufficient. I have had occasion to do a number of these operations and in order to satisfy myself about the question involved I had condom specimens brought to the office for microscopic examination until the semen was undoubtedly clear of spermatozoa. I found that the first specimen obtained after operation contained as many as usual, the second contained about half the number found before operation, the third contained several, the fourth a few and the fifth an occasional organism or none. I never found any after that but I advise patients not to depend on the certainty of disappearance until a few more ejaculations have occurred. One who examines the interior of the seminal vesicles or even a picture of a longitudinal section will realize that there is some uncertainty as to just when the last tiny spermatozoon may be eliminated or when those already ascending the vas above the point of section may have reached the vesicle and then have been discharged.

W G PARKER M D Mount Vernon Ill

HEREDITY IN HYDROCEPHALUS

To the Editor—In view of the recent communication from Dr. Madge T. MacLinn (*THE JOURNAL* Nov. 18 1933 p. 1663) concerning the occurrence of several hydrocephalic children in the same family, I thought that you might be interested in the hereditary hydrocephalus of the mouse now being bred and studied at Harvard. In these mice it behaves as a mendelian recessive which is probably the mode of transmission in some human cases.

CLYDE E. KEELER Boston

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery, Jan 9 13 Sec Dr J N Baker 519 Dexter Ave Montgomery
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B Candidates)* The examinations will be held in various cities of the United States and Canada April 7 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh
AMERICAN BOARD OF OPHTHALMOLOGY Cleveland June 11 Sec Dr William H Wilder, 122 S Michigan Blvd Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY Cleveland June 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
ARIZONA Phoenix Jan 23 Sec, Dr J H Patterson 320 Security Bldg Phoenix
COLORADO Denver Jan 2 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver
CONNECTICUT *Basic Science* New Haven Feb 10 *Prerequisite to license examination* Address State Board of Healing Arts 189½ Yale Station New Haven
DISTRICT OF COLUMBIA Washington Jan 89 Sec, Dr W C Fowler 203 District Bldg Washington
HAWAII Honolulu Jan 8 11 Sec Dr James A Morgan 48 Young Bldg Honolulu
ILLINOIS Chicago, Jan 23 25 Supt of Regis, Dept of Regis and Edu Mr Eugene R Schwartz Springfield
MINNESOTA *Basic Science* Minneapolis Jan 23 Sec Dr J Charney McKinley 126 Willard Hall University of Minnesota Minneapolis *Regular* Minneapolis Jan 16-18 Sec Dr E J Engberg 350 St Peter St St Paul
NATIONAL BOARD OF MEDICAL EXAMINERS The examinations will be held at centers in the United States where there are five or more candidates Feb 14 16 May 7 9 June 23 27 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia
NEBRASKA *Basic Science* Lincoln Jan 9 10 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln
NEW YORK Albany Buffalo New York and Syracuse Jan 29 Feb 1 Chief Professional Examinations Bureau Mr Herbert J Hamilton, Room 315 Education Bldg Albany
NORTH DAKOTA Grand Forks Jan 2 Sec Dr G M Williamson 4½ S 3rd St Grand Forks
OREGON Jan 24 Sec Dr Joseph F Wood 509 Selling Bldg Portland
PENNSYLVANIA Philadelphia Jan 26 Sec Mr W M Denison 400 Education Bldg Harrisburg
RHODE ISLAND Providence Jan 45 Dir Dr Lester A Round 319 State Office Bldg Providence
SOUTH DAKOTA Pierre Jan 16 17 Dir Dr Park B Jenkins Pierre
VERMONT Burlington Feb 7 9 Sec Dr W Scott Nay Underhill
WASHINGTON *Basic Science* Seattle Jan 11 12 *Regular* Seattle Jan 15 16 Dir Mr Harry C Hue Olympia
WISCONSIN Madison Jan 9 11 Sec Dr Robert E Flynn 401 Main St, LaCrosse
WYOMING Cheyenne Feb 5 Sec Dr W H Hassed Capitol Bldg Cheyenne

Utah June Report

Mr S W Golding, director, Department of Registration, reports the written examination held in Salt Lake City, June 28 30, 1933. Nine candidates were examined, all of whom passed. Five physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad	Number Passed
University of Colorado School of Medicine	(1932)	(1933)	1
Northwestern University Medical School	(1932)	(1933)	2
Rush Medical College	(1932)	(1933) 2*	2
School of Medicine of the Division of the Biological Sciences	(1933)†	(1933)†	1
Washington University School of Medicine	(1933)†	(1933)†	3

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists	(1914)	(1931)	California
Bennett College of Eclectic Medicine and Surgery	(1906)	(1906)	Illinois
Chicago	(1932)	(1932)	California
Northwestern University Medical School	(1930)	(1930)	Penna
University of Pennsylvania School of Medicine	(1931)	(1931)	Colorado

The applicants have received a four-year certificate and will receive an M.D. degree and Utah license on completion of internship.
† License withheld pending completion of internship.

Wyoming Reciprocity Report

Dr W H Hassed secretary Wyoming State Board of Medical Examiners reports 6 physicians licensed by reciprocity from Oct 2 to Nov 7 1933. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1931)	(1931)	Colorado
Northwestern University Medical School	(1931)	(1931)	Washington
Craigton University School of Medicine	(1928)	(1928)	Nebraska
University of Nebraska College of Medicine	(1931)	(1931)	Nebraska

Book Notices

Colds and Hay Fever By Frank Coke FRCS Cloth Price \$2 Pp 148 Baltimore William Wood & Company 1933

This is a conversational series of lectures on sneezing. It consists of six chapters covering the structure and function of the nose, the common cold, hay fever, other types of allergic sneezing, paroxysmal sneezing and chronic nasal catarrh. Despite a wealth of valuable references the author pretends to be casual in the sense that he disdains to indulge in minute details, he employs literary by preference to scientific terms, he theorizes when it suits the purpose of clarity, and he speculates and defends his speculations. Whole volumes on hay fever have been compressed into a brief chapter. He speaks of "spluttering coughs," he says that "the common cold is not to be sneezed at" and he contributes as his last line "der is bore id sneezing dan was ever dreabed ob by der doze." The chapter on paroxysmal sneezing, the term he applies to the profuse sneezing and rhinorrhea of arising, is the screen on which he projects the McDonagh scheme of colloidal phases, brownian movement and molecular bombardment. In the very preface he defends speculation on the ground that theorizing may explain many unanswered questions. All this indicates that we are face to face with a self consciously seasoned observer at peace with his subject.

The little volume is packed full of interesting data from statistics to prescriptions. An Englishman would say that he betrays an awfully decent philosophy. For instance, he mentions the summation of stimuli in hay fever, a phrase which epitomizes the necessity for complete testing in hay fever so that positive factors besides pollen may be eliminated during the hay fever season. He sees a significance in the similarity between the common cold and hay fever, because chilling of the body in the former and injection of pollen into the leg in the latter both produce symptoms referable to the respiratory tract. He even mentions the asthma aftermath of hay fever due to the continued irritation by factors such as feathers, physiologically inadequate by themselves to produce symptoms in the given case. Aside from his explanation of early morning rhinitis, which Duke explains on a heat basis he touches on other types of physical allergy as sunlight and follows up by advocating physical therapy in the form of exercises, baths and, indeed, friction with a towel. This clinician is aware of the marked lowering of the temperature of the nasal mucosa when the skin is slightly chilled, a fact to which a group of serious scientists have only recently deigned to bestow their attention. The catholicity of his treatment methods, including specific pollen extract, nonspecific therapy, exercise, diet, local application cautery and electrotherapy, undoubtedly have won him a satisfied following. The one track inoculating allergist will be amazed that there is so much more than a needle and syringe.

Coke has written a tiny tract on sternutation. It is a free hand blue print of the field done with nonchalant facility. It will illuminate the subject if one will read the blue print with jovious effort matching the honest exuberance of its author.

Surgical Nursing Arranged According to the Unit Method By Sister Mary Florence RSN, RSN Instructor in Surgical Nursing Mercy School of Nursing Mercy Hospital Baltimore Maryland Paper Price \$1.75 Pp 119 Philadelphia & London W B Saunders Company 1933

This book is arranged according to the Morrison unit method of teaching. It has five steps which include exploration of the student's background in the subject presentation or an overview of the unit assimilation or collection of information, organization with review and recitation to give evidence of necessary knowledge on the subject. In order to cover the great variety of subjects in the limited time the book is divided into a number of general units containing illustrative specific surgical conditions. There are eight units, which include pre-operative and postoperative management major abdominal operations glandular surgery including the breast, thyroid and lymph glands brain and nerve surgery, orthopedic surgery and various types of anesthesia with their management. A few brief points are made as to the objectives and then a general discussion of the subjects in each unit is given, based

on recent textbooks. The nurse's point of view, given by the author, is especially pertinent and practical. A series of questions is then given regarding surgical subjects, hospital arrangements for the patient, and nursing problems, some going into scientific detail. References are included for the student who receives instruction in the wards as well as in the class room. The book does not include any information in reference to obstetric or purely medical conditions. Although the scope is limited to surgical nursing, the arrangement is well planned and is particularly suitable in conjunction with ward instruction.

Urologie infantile Par les Drs Beer et Hyman. Monographies de pediatrie et de puériculture. Preface du Dr Ed Papin chirurgien de l'Hôpital Saint Joseph. Traduit de l'Américain par le Dr Fritz Busser. Paper. Price 40 francs. Pp 262 with 50 illustrations. Paris: Gauthier Villars 1933.

This volume is beautifully made up. There are numerous illustrations, chiefly reproductions of roentgenograms, which are excellently chosen. The print, paper and illustrations leave nothing to be desired. It is the first book published in the French language devoted entirely to urology in infants and children and is a translation by Dr Busser of the American edition of 1930. The sequence of the arrangement of the subject matter is orderly and rational and is divided into fourteen chapters, each having appended a brief but valuable bibliography, chiefly from American and German sources. The first and second chapters take up general symptomatology and methods of examination. A chapter is devoted to a discussion of enuresis. An excellent chapter of forty-six pages is devoted to congenital malformations and one of twenty pages to chronic renal tuberculosis. The final chapter is devoted to malignant tumors of the kidney. This volume will supply an unfilled niche in the libraries of surgeons and students abroad.

A prova da fenolsulfoneftaleína e as relações ureicas (coeficientes ureo secretórios) na clínica geral. Por Machado Macedo, assistente livre da 2ª clínica cirúrgica. Dissertação ao agregado do 7º grupo da Faculdade de medicina de Lisboa—1932. Paper. Pp 174. Lisbon: Livraria Ferlin 1932-1933.

This book is devoted to the analysis of the accumulated experience of eighteen years in the second surgical clinic of the University of Lisbon (service of Professor Cabeça) in determining the functional capacity of the kidney in health and disease by means of phenolsulphonphthalein and by the various coefficients of urea secretion. The study embraces hundreds of cases and the analysis attempts to establish the relative merits of the various procedures and tests employed. After outlining the development of the field of tests of renal function historically, the author gives the technic for utilizing the phenolsulphonphthalein test. This consists of determining the amount excreted in the urine following its intravenous administration at thirty-five minutes and at sixty-five minutes. He emphasizes the fact that the amount excreted in the first period is often a better index of the renal functional capacity than the total excreted for sixty-five minutes, which however, he accepts for the standard of comparison with all the other tests used. In determining the coefficient of urea secretion he refers to the difference in opinion of various authorities as to the laws governing urea secretion. He calls attention to the work of Marshall and Davis, which he thinks refutes the assertion of Ambard that the secretion of the urea in the urine varies with the square root of its level in the blood. Marshall's work indicated that the urea secretion varies directly with the level of this substance in the blood and this idea is incorporated in the formula of Van Slyke. The author regards the formulas of both Ambard and Van Slyke as empirical and too theoretical and himself suggests three new formulas. The one however, which he prefers is Ur/VD in which Ur represents the level of the urea of the blood in milligrams per hundred cubic centimeters and D the urea excreted in the urine for twenty-four hours. However, in the actual performance of this test D is not actually determined but is calculated from data derived from the analysis of the two samples of urine collected. The most satisfactory method of ascertaining the functional capacity of the kidney according to Machado Macedo is to obtain at one and the same time both the phenolsulphonphthalein excretion and the coefficient of urea excretion by the formula of Ur/VD . This combination is effected by perform-

ing the tests in the morning with the stomach empty, the bladder is emptied, the phenolsulphonphthalein is injected, and at the same time blood is removed for the determination of the blood urea. The urine is then collected at the end of thirty-five minutes and sixty-five minutes. The phenolsulphonphthalein output is determined for each of the two periods and then for the hour as a whole. The urea is determined on a mixture of these two samples of urine and the amount for twenty-four hours calculated on the basis of the amount excreted in this hour. The coefficient of urea excreted is then determined according to the formula presented. Machado Macedo accepts the phenolsulphonphthalein test as the standard contrasting with it the results of all five formulas for coefficients of urea secretion. He finds that the new formula is most frequently in accord with the results of the phenolsulphonphthalein test. Therefore, he advocates its employment. The book gives evidence that the work has been done with meticulous care by men of broad understanding and great clinical experience. The conclusions represent the final results of prolonged intensive and controlled investigation.

Der elektrische Faktor der Nierenarbeit. Von Dr h c Rudolf Keller. Paper. Price 1 mark. 1 p 106 with illustrations. Mährisch Ostrau: Verlag Julius Kittls Nachfolger 1933.

This little volume is primarily derived from the author's book "Electricity in the Cell," with the addition of new material and some corrections. The aim of the author is to call attention to the part that can be played by electrical forces in the reabsorption of water and salts as well as for instance sugar and urea. It is shown that those parts of the renal tubule in which reabsorption of water takes place carry, by actual measurement, the greatest negative charge. The results are based mainly, on studies of invertebrates or lower vertebrates but not on mammalian kidneys. It is claimed that these parts have had the same function in the renal organization of all animals. It is shown that the migration in the electrical field could explain the reabsorption of electrolytes and nonelectrolytes, including water within those limits in which this reabsorption occurs. From the presentation it is evident that we are very far from a complete understanding of normal renal function, and that proof of the electrically governed transportation of substances has been possible, so far to only a limited extent. The neglect from which the lymphatic apparatus of the kidney has suffered is strongly emphasized. The little book is certainly stimulating.

New Feet for Old. A Simple Statement of Some Recent and Highly Cheering Discoveries Concerning Common Foot Disorders Their Cause and Cure for the Mutual Use of Physicians and Patients. By John Martin Hiss. BSc. D.O. MD. With an Introduction by Edgcomb Pinchon. Cloth. Price \$2. Pp 140 with 43 illustrations. Garden City: Doubleday Doran & Company Inc 1933.

The author states that his purpose in writing this book is "that it may help to set cinderella free, and liberate men and women everywhere from a torment and a handicap wholly needless." The book contains a biography of the author, including the statement that he graduated in science, medicine and osteopathy. Many of his statements are based on guess work and not on accurate statistics. For example that three people out of five in the United States suffer from some form of foot trouble and that 30 per cent of these were under the stress of broken arches and bunions. Another misstatement is that more pain is inflicted on civilized people by foot troubles than all other physical ills rolled into one, that practically all of this is needless, and that nothing is needed for relief except a little knowledge intelligently applied. He states that 90 per cent of foot troubles are directly due to the use of shoes that broken arches and bunions can be corrected even in extreme cases by simple treatment and without the use of debilitating devices or hazardous operations. He makes the statement "few realize that in carrying the average person a mile the foot endures a stress of 250 tons." This book contains many "catch phrases" authority for which is not proved. The author's statement is untrue that there is very meager literature lay or medical on the foot, and practically none that exhibits a true grasp of its structure and problems. The author describes and illustrates his device known as the classifootometer the value of which seems to be overestimated. He states that

shoes forcibly mold the feet out of line. Ordinary daily activity, such as walking, running, or standing with the feet out of line, causes misplacement of bone, limitation of foot motion and strain of the arches. He speaks of 'unhappy feet'. He advises against the use of appliances, pads and supports which "are designed only to smother the symptoms without eradicating the cause". He states that the only obvious, sensible, line of treatment is to eliminate harmful shoes and to set the bones and reconstruct the arch. He states that broken arches are corrected by the re-setting of misplaced bones, and neither cure nor even relief is procurable by any other method and least of all by the wearing of freak shoes or arch supports. The author also says that most bunion-ridden feet can be corrected and made as straight as a Greek athlete's by manipulation plus a simple operation, and without the removal of any normal bone structure whatever. He believes that a bunion is nothing more nor less than dislocation of the great toe joint and that it should be corrected but should never be operated on. Enough has been said to indicate the wholly unreliable and unscientific character of this opus.

Röntgendiagnostik der Knochen und Gelenkkrankheiten Von Professor Dr. Robert Klenböck. Heft 2. Knochenectomie des Knie. (Abteilung Knochenkrankheiten.) Paper. Price 7.60 marks. Pp. 105. 192 with 19 illustrations. Berlin & Vienna. Urban & Schwarzenberg. 1933.

This monograph, by one of the greatest European roentgenologists, is on the subject of ecchinococcus disease of the bone. The illustrations are of the highest character from the standpoint of pathology and for teaching purposes. The book will be of interest to the roentgenologist and to the specialist in bone pathology. It will be of little interest to the general practitioner.

Undulant Fever and Its Relation to Brucelliasis in Cattle and Swine in Virginia. By Leland Edson Starr. Assistant Animal Pathologist. A Dissertation Submitted to the Graduate Faculty in Candidacy for the Degree of Doctor of Philosophy. University of Virginia. Doctoral Thesis No. D 203. Virginia Polytechnic Institute. Virginia Agricultural Experiment Station. Technical Bulletin 48. Paper. Pp. 50. Blacksburg. Montgomery County, Virginia. 1933.

This carefully conceived monograph deals primarily with the distribution of brucelliasis (Bang's disease, contagious abortion) in domesticated animals in the state of Virginia. During the years 1931 and 1932, 45,285 dairy cattle were tested for *Alcaligenes* (*Brucella*) agglutinins, this constitutes approximately 10 per cent of the dairy cattle in Virginia. The serums of 10 per cent of the tested cattle gave positive reactions. While the disease is widely distributed throughout the state the percentage of infection is greatest in the intensive dairy sections. The serums from cattle in seventeen dairy herds consisting of 362 animals which had supplied raw dairy products to individuals who subsequently developed undulant fever gave positive reactions in 47.2 per cent of tests. This demonstrates the close relationship of the infection in dairy cattle to the occurrence of its homologue undulant fever, in man. The percentage of positively reacting serums was much greater among those employed in abattoirs and among veterinarians than in the general population. Seventy proved cases of undulant fever have occurred sporadically over the state during the period from 1929 to 1933. The greatest number of these cases occurred in the northern part of the state which corresponds with the area in which *Alcaligenes* infection is most prevalent among dairy cattle and where comparatively little of the milk is pasteurized. About 40 per cent of the cases of undulant fever appeared to be the result of contact with infected animals or their discharges while 60 per cent apparently resulted from the ingestion of raw contaminated dairy products. The goat population in Virginia is small and these animals did not appear to be a factor in any of the cases of undulant fever investigated by the author. Of 1,316 samples of swine serums 3 per cent gave positive reactions. There is little evidence that the occurrence of brucelliasis in swine is of any great importance from the standpoint either of the live stock industry or of the public health. Irradiation of *Alcaligenes* infection in dairy herds should be insisted on by dairymen, veterinarians, public health officers and physicians. It seriously lowers milk production in dairy herds. By cooperating with veterinarians and physicians in their efforts to remove a public health hazard the dairyman is also conserving his economic interests.

Medicolegal

Malpractice Death Following Cesarean Section, Failure to Discover Fibroid Tumor.—The defendant-physician was employed to attend the plaintiff's wife during pregnancy and childbirth. He examined her from time to time and found her condition satisfactory. He attended when labor came on, and after he found himself unable to effect delivery by manipulation he used forceps, but without success. He then called in a consultant, an obstetrician of many years experience, and a cesarean section was performed. In the course of the operation a previously undiscovered fibroid tumor was found in the posterior wall of the uterus. The patient died some sixty hours after she had been operated on. The husband sued the attending physician, charging negligence and unskillfulness. The trial court gave judgment in favor of the physician, and the husband appealed to the court of appeals, first district, division No. 1, California.

No evidence was offered by the plaintiff, said the district court of appeals to show negligence or unskillfulness on the part of the attending physician in connection with his failure to discover the fibroid tumor prior to the operation or to show that by the exercise of ordinary care it could have been discovered and when due care, skill and judgment are exercised a failure to make a correct diagnosis does not render a physician liable. The plaintiff did not claim that the cesarean section was negligently or unskillfully performed but relied solely on the contention that it should not have been performed. On the plaintiff's behalf, a physician testified that the tumor would not have prevented the normal delivery of the child, that a cesarean section was not necessary and should not have been performed, and that if there were obstructions that prevented delivery a symphysectomy should have been done. On behalf of the defendant, however, one physician testified that the tumor would have prevented the natural birth of the child and three expert obstetricians testified that symphysectomy in cases of childbirth was obsolete, that it was highly dangerous and was liable to leave the patient a cripple, that cesarean section was universally used when a baby could not be delivered through the natural channel, and that the course pursued by the defendant physician was in accordance with good obstetric practice.

The judgment of the trial court for the defendant-physician was affirmed.—*Ben v. Abions (Calif.)*, 19 P. (2d) 523.

Evidence Testimony of Expert Witness as to Mental Capacity of Grantor.—One Hays, 80 years old, conveyed certain property to the appellant Harrison. Hays died a few months later and his collateral heirs instituted proceedings to set aside the conveyance. From a judgment for the collateral heirs, Harrison appealed to the court of civil appeals of Texas, San Antonio. He urged error among other things in the action of the trial court in permitting a physician to testify that in his opinion Hays did not have the mental capacity to convey the property in controversy. This was error said the court of civil appeals. It is well settled in Texas that no witness whether he be a subscribing witness, a medical expert or a layman, can state over proper objection, his opinion of the capacity of the testator or the maker of any contract to make such instrument when such opinion assumes the shape and has the effect of being an opinion on the legal capacity of the party in question. It is therefore obvious that the testimony here complained of was inadmissible over timely and appropriate objections. The judgment was reversed and the cause remanded.—*Harrison vs. Davis (Texas)* 58 S. H. (2d) 1027.

Evidence Lay Testimony as to Sickness.—Where two people said the Supreme Court of Arkansas came in contact with each other frequently it is not a matter of expert knowledge for one to tell whether the other appears to be sick or well. These are matters of common experience and observation and a lay witness after stating the facts on which his opinion is based, may give his opinion in such matters. It is proper, therefore for a mother to testify that her children after being exposed to ammonia fumes were pale and sick.—*Southern Ice & Utilities Co. v. Bryan (Ark.)* 28 S. H. (2d) 920.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons Chicago Jan 8 10 Dr Philip Lewin, 104 South Michigan Blvd Chicago Secretary
Annual Congress on Medical Education and Licensure Chicago February 12 13 Dr W D Cutter 535 North Dearborn Street Chicago Secretary
Society of American Bacteriologists Philadelphia Dec 27 29 Dr James M Sherman Cornell University Ithaca N Y Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Sixth Annual Meeting held in Chicago Oct 27 and 28 1933

The President DR M A BLANKENHORN, Cleveland, in the Chair

(Continued from page 1994)

A Study of the Effect of Mercurial Diuretics on Kidney Disease

DRS E S MAXWELL JOHN W SCOTT and JOHN HARVEY, Lexington, Ky We have had the opportunity of observing the clinical course and of studying the kidneys post mortem in twenty-one patients to whom mercurial diuretics had been given and who died of congestive cardiac failure One patient had had 240 cc of salyrgan in 198 doses Our examination of the literature leads us to believe that this is the largest amount given to a patient who has come to autopsy Six patients had salyrgan within seventy-two hours of death Three patients showed calcium deposits in the kidney tubules The kidneys from other patients dying of congestive cardiac failure, who had not had mercury, were also examined Our observations seem to us to indicate that 1 Changes in the kidneys from patients who have had mercurial diuretics are in no way different from those commonly seen in patients dying of congestive cardiac failure without the use of mercury 2 Continued use of salyrgan in doses of 12 cc or less, has not, in our experience, been followed by permanent kidney damage, and in one instance no damage could be demonstrated after 240 cc of this drug in such doses had been given 3 A dose approximating 12 cc (the contents of one ampule) need rarely be exceeded for effective diuresis

DISCUSSION

DR B T HORTON, Rochester, Minn I think that these observations on the use of mercurial diuretics confirm the general clinical impression regarding these drugs At the Mayo Clinic we have observed fewer toxic manifestations following the use of salyrgan (mersalyl) than of novasurol (merbaphen), and I think there can be no doubt that salyrgan is a safer diuretic drug to use than novasurol This has been recently demonstrated by a study carried out by Binger and Keith Toxic manifestations that have been observed, usually followed the use of novasurol, consisted of stomatitis, gross hematuria and diarrhea At necropsy we have seen in a few instances ulcers in the bowel, particularly in the colon, following the use of these mercurial compounds It is obvious that an ideal diuretic drug has not yet been found

DR MOSES BARRON, Minneapolis I should like to ask whether the authors saw any changes in the urinary excretion, as to the amount of albumin and casts, following long repeated doses of salyrgan

DR JOHN FOULGER, Cincinnati There is a third mercurial drug used as a diuretic, called novurit It is better than either salyrgan or novasurol In one case of extreme edema the patient began to show diuresis in twenty minutes after the injection of 2 cc of Novurit intravenously That patient was absolutely refractory to either of the other two drugs With regard to novasurol, there arises a question as to whether the barbitol present would affect toxicity

DR ROGER MORRIS, Cincinnati Some years ago I had a patient who had what is called clinically parenchymatous nephritis, with extreme edema The skin of the legs was so tense that it cracked and fluid was oozing from it. She had been alkalimized with no benefit We were able to change the

reaction of the urine and then gave her salyrgan in capsules. They were put up in that form for a time for experimental use I have never seen such marked diuresis following the administration of salyrgan by mouth The edema cleared up The amount of albumin in the urine, which was so great that it almost coagulated solid in a tube, decreased and the patient made a good recovery At no time was there blood in the urine She died a year later from carcinoma of the breast Certainly her kidneys were not damaged by the administration of salyrgan so far as one could observe clinically There was nothing in the urine to indicate renal irritation She made a good symptomatic recovery

DR WILLIAM THAHIMFR, Chicago Dr Brams, at Michael Reese Hospital, administered novurit intravenously to a number of patients and found that its diuretic action was at least equal to that of salyrgan

DR J W SCOTT Lexington Ky I want to reply to Dr Barron because I know more of the clinical course of the cases than Dr Maxwell The case he refers to in which the diuretic has been used for a long period the patient that had 240 cc over a course of five years was not under our observation in the hospital until the last few days of her life No observations were made on the effect of salyrgan on the amount of albumin and casts in the urine

Extrapelvic Symptoms Associated with Ovarian Cystic Disease

DR L L SEARINGHAUS, Madison, Wis Frequent occurrence of an involutional group of symptoms in women with demonstrable cystic disease of the ovary led to a study of sixty-three case histories Some patients were treated as premature cases of menopause until pelvic examination or curettage showed that the pathologic process was one of ovarian cysts with the commonly associated hyperplastic endometrium The observations in these two groups indicate that complaints usually thought of as due to vasomotor, cardiovascular or psychoneurotic disturbances may be caused by endocrinopathies In thirty-six of the sixty-three women there were palpably enlarged ovaries Curettage, done in only thirty cases, demonstrated endometrial hyperplasia The menstrual histories were characterized by menorrhagia, metrorrhagia, irregular intervals, frequent flowing, and some long periods of amenorrhea Most of the patients were in the third and fourth decades The extrapelvic symptoms found so frequently in this group are the same as those seen in the climacteric Obesity and various abdominal pains occurred in 71 per cent Nervousness was a complaint in 71 per cent, with attacks of melancholy and frequent weeping in 60 per cent Hot flashes appeared in 57 per cent, with dyspnea and palpitation without cardiac cause in 56 per cent Vertigo was bothersome in 49 per cent Morbid worrying was recognized in 40 per cent insomnia in 35 per cent, and paresis in 24 per cent The nature of these symptoms and the entire clinical picture would lead to a diagnosis of involutional psychosis except for the age and pelvic condition It is suggested that the psychic, vasomotor and physical changes are essentially the same as in the climacteric because of similar disturbance to the equilibrium between the anterior pituitary, the ovaries, and such other organs as the suprarenals Quite apart from the experimental therapy to be described or the hypothesis of endocrine origin suggested, this group of complaints merits attention Instead of a diagnosis of psychoneurosis following such a history, a detailed inquiry about the menses and gynecologic examination are warranted There is reason to believe that the cystic ovary is a result of abnormal type of pituitary stimulation to the follicle The cystic ovary produces the same effect on the uterus that follows continued administration of large doses of theelin in the absence of the functional corpus luteum Therefore therapy has been planned with use of materials to stimulate luteinization of the cystic follicles First a potent fraction was prepared from pregnancy urine concentrates and used in twenty of these cases Later genuine anterior pituitary extracts of assayed potency were employed with thirty-one of the women A number had both types of treatment The material is given intravenously, in doses equivalent to 0.5 Gm of dried anterior pituitary, administered once each month The time selected is fourteen days after the menses begin, when ovulation should normally occur

Results of considerable promise were secured, including regulation of menstrual rhythm and volume and relief of the symptoms described

DISCUSSION

DR W J DIECKMANN, Chicago Hyperplasia of the endometrium is a very common pathologic diagnosis made on curettings. The curettage is usually performed for abnormal uterine bleeding. In a large number of patients, the pelvic examination indicates an essentially normal pelvis. I believe that the hyperplasia is due to hormonal stimuli and the bleeding in a few cases has been stopped by the injection of serum from pregnant women and also by anterior pituitary. Novak states that the cessation of the bleeding after the injection occurs too quickly for any hormone action to have occurred. My treatment has been empirical. I wish to ask whether or not any curetting was done after the patients were clinically cured.

DR GEORGE B EUSTERMAN, Rochester, Minn. The gastrointestinal disturbances in these women are of great interest. Many will recall the era when removal of the ovaries for disturbances real or imaginary, was a popular procedure with some surgeons. Many of these victims were young women, and the premature menopause was eventually followed by gastrointestinal disturbances, usually of a spastic nature; these spastic phenomena invariably involving the pylorus and colon. Of course, some of these individuals were psychoneurotic from the outset, a fact that might have been responsible for their disturbances as well as for the operation, but many of them had a stable nervous system and the subsequent gastrointestinal disturbances could only be related to the operation. Of course in a goodly number of these patients nervous instability in one form or another also supervened.

DR WALTER W HAMBURGER, Chicago I should like to ask Dr Sevringhaus whether he believes that some of these patients are really psychotic.

DR E L SEVRINGHAUS, Madison, Wis. I am confident that cure or even relief has not been accomplished by curettage, because the symptoms have continued in spite of thorough curettage. I have been unable to recure after treatment. I do not say that luteinization has been produced. Curettage and pelvic examinations have not relieved these patients. Also, relief from this pituitary extract given once per month is not permanent. Omission of monthly treatments was followed by return of symptoms usually within two months. There were some unpleasant, rather temporary, reactions simulating the reaction from intravenous injections of histamine, which consist of a bad taste, feeling of extreme warmth, vertigo, and nausea with no emesis, lasting from three to five minutes and coming on a minute after injections. This reaction may continue even though the material has lost its potency judged clinically or by assay in rats. In response to Dr Eusterman's comments, I think it must be realized that with the climacteric there is disturbance of the particular organ or mechanism in the body that is the most labile. There are certain types of women who will show vasomotor disturbance which is common a small portion with a pseudothyrotic picture and then there is the very large fraction who have the psychotic picture. I am sure that the gastro-intestinal disturbances are due to functional change in the part of the body that is most labile. In response to Dr Hamburger's question I think that these patients develop definite psychoses, if one calls a woman psychotic because she worries so as to make of herself a nuisance to her family, if she is so unstable, suffering with dyspnea and palpitation, that she cannot take care of her simple household duties, and if she is demanding attention from her husband at every turn. Some women have been sent to the hospital for neuropsychiatric care because of these symptoms. The curious thing is the frequency with which psychotic or semipsychotic pictures are seen associated with organic lesions of this type.

Parathyroid Hypertrophy and Hyperplasia of Rickets and Osteomalacia

DR R M WILDER, G M HIGGINS and C. SHEARD, Rochester, Minn. Experiments with chicks reveal that deprivation of vitamin D in sufficient degree to cause rickets will produce hypertrophy and hyperplasia of the parathyroid glands and that the parenteral administration of parathyroid extract in such minor degrees of deprivation of vitamin D prevents

this hypertrophy and hyperplasia but that when the deprivation of vitamin D is extreme, so that rickets is clearly in evidence, the administration of parathyroid extract may restrict but will not prevent the hypertrophy and hyperplasia of the glands. It appears from this and from other evidence that the hypertrophy and hyperplasia of the parathyroid glands of chicks, under conditions of deficiency of vitamin D, depend on their accelerated functional activity. Other observations are interpreted to mean that the supply of parathyroid hormone determines the sensitivity of the organism to the action of vitamin D. A diminished supply of the hormone as after parathyroidectomy diminishes the ability of the organism to function normally with restricted amounts of vitamin D; an augmented supply conditions the tissues of the organism so that the effects of the vitamin are more intense and so that amounts of the vitamin that otherwise would not prevent rickets do prevent rickets. By virtue of the capacity of the parathyroid glands to accelerate the rate of supply of their product, and owing to the resulting conditioning of the tissue (increased sensitivity to vitamin D), the organism is enabled to withstand periods of relative deficiency of vitamin D which otherwise would produce rickets or osteomalacia. This compensatory mechanism is adequate to protect against relative degrees of deficiency of vitamin D, it is inadequate, as would be expected, when deficiency of vitamin D is extreme.

DISCUSSION

DR JOSEPH F BORG, St. Paul I should like to ask the authors whether in their cases of marked vitamin D deficiency with parathyroid treatment they found any changes in the blood calcium.

DR RUSSELL M WILDER, Rochester, Minn. In the experiment with only slight deficiency of vitamin D, the blood calciums were not depressed yet the parathyroid glands enlarged. This seems to point to the direct stimulation of the parathyroids in vitamin D deficiency rather than to stimulation by the hypocalcemia that accompanies conditions of more severe vitamin D deficiency.

The Association of Pellagra and Vincent's Infection

DRS TOM D SPIES and HENRY A DEWOLF, Cleveland Six typical cases of pellagra, with stomatitis and glossitis, were selected for study. Repeated smears of the mouth and, in two instances of the vagina showed a conspicuous number of spirochetes and fusiform bacilli as well as a predominance of these two organisms. The patients were then placed on a restricted diet of water and 500 Gm or more of autoclaved yeast, their lesions promptly remitted and subsequent smears from the same areas in the mouth and vagina showed a great decrease in the number of spirochetes and fusiform bacilli. The clinical significance of these observations is shown to be important in that two patients, confined to a hospital for contagious diseases while being treated for severe Vincent's infection were found by a consultant to have extensive lesions of pellagra.

DISCUSSION

DR JOSEPH L MILLER, Chicago Dr H Gideon Wells has been doing some work on the etiology of ulcers in the buccal cavity. He believes that fusiform and spirilliform bacilli are always secondary invaders. They are not responsible for the lesion but find here a suitable place for their development.

Studies on Etiology and Treatment of Neutropenic States

DR CHARLES A DOAN, Columbus, Ohio The importance of differentiating the many clinical conditions in which leukopenia appears as a prominent part of the laboratory examination is evident. More than 80 per cent of the patients referred to our group with leukopenia during the past three years have not been of the types that fall into one of the several subdivisions of the original Schultz syndrome. An uncritical attempt to treat all leukopenias by any one method will continue to result in a large proportion of failures. An understanding of the underlying mechanism in the individual case is the first essential to rational therapy. This may best be secured by a careful study of the quality and character of the blood cell present interpreted in the light of a careful history and physical examination.

A special study during the past year of the blood of patients in whom a severe infection definitely preceded the development of leukopenia resulted in the isolation of several organisms: Friedlander's bacillus, *Streptococcus haemolyticus*, *Streptococcus viridans* (two strains) and *Staphylococcus aureus*. With the first two we were able to reproduce the peripheral blood and bone marrow pictures observed in the respective patients from whom these strains were isolated. Intraperitoneal and intramuscular implantations of living cultures in celloidin or gelatin capsules and intravenous inoculation of cultures and sterile filtrates were made. I conclude that it is not so much the type of organism as the state of reactivity of the host which conditions the level of leukocytic response under these conditions and that exsanguination-transfusions present the best hope from a therapeutic standpoint.

In certain cases of chronic, noninfectious deficiency neutropenia with a concomitant moderate degree of secondary anemia and thrombopenia, intravenous liver extract has controlled the levels of all three bone marrow elements.

The effect of varying small doses of x-rays on myelopoiesis in pigeons has been studied in the attempt to determine the stimulatory versus the destructive effects of this suggested method for treating neutropenia. I have yet to find a stimulatory dose which does not show some prior evidence of myelocytic destruction. I therefore believe that roentgen treatment is contraindicated whenever a hypoplastic myeloid marrow underlies a given leukopenic state. In this type of case some nucleic acid or nucleotide derivative continues to offer the best promise of successful myelopoietic stimulation.

Primary Granulocytopenia After Administration of Benzene Chain Derivatives

DRS F. W. MADISON and T. L. SQUIER, Milwaukee. The increased incidence of primary granulocytopenia (agranulocytic angina) has paralleled the increase in use of drugs containing a barbiturate combined with amidopyrine. Analysis of a series of thirteen consecutive cases has shown that all the patients had taken, over varying periods of time prior to the onset of their acute symptoms, one or more drugs containing benzene ring derivatives. All of these cases occurred either in physicians, nurses or patients under a physician's care prior to the onset of the granulocytopenia. Seven patients were under close medical observation and were known to have had normal white cell response during the illness that preceded the granulocytopenia, and after recovery developed granulocytopenia during the period of convalescence. All of them had been given drugs containing the benzene ring. In five of the cases, benzene ring derivatives were used during the treatment of the granulocytopenia and four patients died (mortality, 80 per cent) while the one patient living has a chronic granulocytopenia. In eight of the cases benzene ring derivatives were absolutely avoided and only two patients died (mortality 25 per cent), one within thirty-six hours, and the other failed to show any evidence of response to treatment. One patient who had made an excellent recovery from acute granulocytopenia showed marked fluctuations in the granulocyte count and was found to have been taking a benzene ring derivative. When this was stopped, the count promptly stabilized at a normal level. Two patients after recovery showed an abrupt drop in the granulocyte count after a single isolated dose of a benzene ring derivative. All who recovered and have avoided the use of these drugs are living after periods of from three months to two years.

Eleven rabbits were given all-iso propyl barbituric acid (allonal) with amidopyrine by mouth in relatively large doses. One rabbit showed an abrupt drop in the granulocyte count on the twenty-sixth day of medication and died on the thirtieth day. Preceding death there was complete absence of granulocytes in the peripheral blood and the picture was characteristic of primary granulocytopenia. On necropsy there were no grossly abnormal observations, except that on the tongue there were a number of small whitish blebs and a small pit on the left side of the tongue as from an ulcer. The bone marrow was absolutely lacking in cells of the granular series. None of the other rabbits showed the blood picture of granulocytopenia, but three were found to have definitely hypoplastic bone marrow on necropsy and in these marked diminution of eosinophil granules was a striking feature.

DISCUSSION ON DEFICIENCY OF BLOOD CELLS

DR C. H. WATKINS, Rochester, Minn. In a large percentage of our cases of agranulocytosis, there seems to be a possibility of an idiosyncrasy to amidopyrine or to one of the derivatives of barbituric acid. A great deal of clinical and experimental work will be necessary to settle this question, but it seems reasonable to assume that a leukopenic syndrome may represent the outward manifestation of an idiosyncrasy to a drug of this class. I have one patient who has had a total of twelve attacks of agranulocytosis at intervals of every one or two months for the past two and a half years. This patient had been taking amidopyrine for migraine. Since she has discontinued the use of this drug and of all other sedatives, she has had no further attacks. One other patient seems to be able to produce leukopenia at will by taking 10 grains (0.65 Gm.) of amidopyrine. If agranulocytosis sometimes is the result of idiosyncrasy to drugs, I think it must also be assumed that there is a primary dysfunction of the bone marrow, so far as reduction of leukocytes is concerned for there is no change in the blood of most persons following the use of amidopyrine or of any of the derivatives of barbituric acid.

DR C. W. BALDRIDGE, Iowa City. I should like to ask Drs. Madison and Squier whether they think that the action of these drugs is the same as that of benzene, because years ago when benzene was given in leukemia the action was not nearly so rapid as the reactions they have described.

DR SAMUEL B. GRANT, St. Louis. I have had an experience with one patient that confirms these studies of Drs. Madison and Squier. A patient with arthritis who had taken amidopyrine regularly for several months discontinued the drug on admission to the hospital for cholecystectomy. During convalescence from the operation she was given a dose of a sedative combined with amidopyrine. A few hours later she had a chill followed by transient unexplained fever. Blood counts were not made. A few weeks later she started taking amidopyrine and immediately had another chill and rapid rise of temperature. It happened that blood counts four days previously had been normal. On the following morning the leukocyte count was 2,000, with 2 per cent granulocytes. I had the feeling that the amidopyrine had something to do with it and she was never allowed to take it again.

DR P. S. HENCH, Rochester, Minn. A patient of mine with chronic infectious arthritis developed on September 12 a mild fever (99-99.5 F) but no chill. The white blood count, which had recently been 8,600, was found to be 2,100. In the next three days it dropped to 1,400, the differential count showed 49 per cent lymphocytes and 9 per cent neutrophils. Dr. Watkins suggested that the neutropenia might be due to allonal or amidopyrine, which the patient had been given in small doses for six days. All drugs were stopped and on September 17 the white blood cells had returned to 6,000, with a normal differential count. The patient felt quite well throughout the episode. September 23, he developed a jaundice with a serum bilirubin of 12.5 mg. direct reaction. The jaundice lasted one week and was not associated with a change in red count or hemoglobin. Have Drs. Madison and Squier noted jaundice in any of their cases?

DR JOHN O. MCGUIRE, Cincinnati. I should like to add one case to those reported by Drs. Madison and Squier. The patient was an elderly woman who developed a primary leukocytopenia. Before the development of symptoms she had been taking occasional doses of allonal and amidopyrine. The white count dropped to 1,000 and the granulocytes disappeared. Pneumonia, perirectal necrosis and myocardial insufficiency appeared consecutively. There was an increase in the white blood cells to 6,000, with 80 per cent neutrophils, the day before death.

DR JOHN F. FOULGER, Cincinnati. I should like to ask whether Drs. Madison and Squier consider that barbitals with or without phenol or amidopyrine is a causative factor. In their animal experiments they used what is really pure allonal. In the treatment of patients one usually gives allonal plus amidopyrine. Do they think the action is due to the phenol group or sometimes to the barbituric acid group or to the synergistic action of the two?

DR RICHARD M. MCKEAN, Detroit: I should like to ask whether the patch test for cutaneous sensitization or for intracutaneous injection with the benzene chain group was used in any of these cases as evidence of a true allergic phenomenon.

DR CARROLL L. BIRCH, Chicago: Was an attempt made to determine whether there was a redistribution of these cells or a definite regeneration? This constant drop may be due to redistribution of the white cells rather than to a destruction.

DR F. W. MADISON, Milwaukee: In answer to Dr Baldrige's question, whether we think the action is the same as the action of benzene I would say no. We started out with the feeling that perhaps it was an action similar to that of benzene. We abandoned that very soon. The fact that we see these acute drops not only experimentally but clinically rules out the toxic effect that has previously been described. Whether there is any relation between the two types we do not know. We have a definite feeling that we may be dealing with a peculiar type of allergic response, the nature of which we do not know and have not been able to determine. In answer to the question about the chemistry, I would say that the allonal we used in experimental rabbits is the same as is used clinically. Whether the barbituric acid derivatives without amidopyrine are capable of causing this type of reaction, we do not know. We have wondered about it but we have no definite evidence except that recently we gave a patient amytal alone and had no response in the total white count. That there may be a synergistic action is entirely possible. In answer to Dr McKean, we have not done the patch tests. We rather doubt that we shall get any evidence of skin sensitivity.

Mechanism of the Production of Anemia

DR RAPHAEL ISAACS, Ann Arbor, Mich.: A study of the sternal bone marrow of seventy-five patients with various types of anemia was made, serum suspensions of the marrow being used for accurate counts of the number of cells per cubic millimeter and for differential counts. Seven stages in the development of the erythrocyte can be identified in the bone marrow: a primitive blast (lymphoid cells), the megaloblast, the macro-normoblast, the normoblast, the reticulocyte, the granule red blood cell and the mature erythrocyte. The primitive cells are increased in number in chronic nephritis and pernicious anemia but are decreased in the anemia of acute hemorrhage, in aplastic anemia and in Hodgkin's disease treated with x-rays. In the two latter conditions and in chronic nephritis there is an arrest of development at this stage but in pernicious anemia (untreated) the inhibition develops at the megaloblast stage. Megaloblasts are reduced in number in the other diseases enumerated. The macro-normoblast is the predominant stage after acute hemorrhage, but the actual numbers are also increased in pernicious anemia in beginning remission. The normoblastic stage is the predominant form in normal bone marrow and these cells are decreased in number in all anemias. The macro-normoblastic growth in acute hemorrhage is not the result of inhibition of growth (failure to shift to the right), but a so-called shift to the left because of inability of the cells to ripen fast enough to meet the demands of the peripheral circulation. The megaloblast stage is sensitive to the effects of liver or stomach medication; the macro-normoblast is stimulated by iron; no known therapeutic agency affects the maturation of the primitive blast.

DISCUSSION

DR C. W. BALDRIDGE, Iowa City: I should like to ask Dr Isaacs whether he thinks that iron actually stimulates blood formation or merely furnishes a substance that is necessary for normal hemopoiesis, also whether or not iron will work satisfactorily in the anemia of chronic nephritis as it will in the anemia of hemorrhage.

DR ROGER MORRIS, Cincinnati: After the cells have responded to liver therapy will they return to the macro-normoblast stage? If the macro-normoblasts predominate after the response to liver treatment have you tried carrying the patient along with iron to see whether the improvement will continue?

DR RAPHAEL ISAACS, Ann Arbor, Mich.: In answer to Dr Baldrige I believe that the iron stimulates the formation of normoblasts as the blood remains stationary until iron is

given. In chronic nephritis, iron alone will not stimulate the cells to grow. In reply to Dr Morris: If the bone marrow cells respond to liver they quickly return to normal. The first stage is a decreased number of megaloblasts and then the bone marrow becomes absolutely normal as far as I can tell. The plan of carrying the patient along with iron after the megaloblasts have responded to liver treatment presents some complications. Patients with pernicious anemia have stored in their bodies enough iron to carry them through, so that it is doubtful whether additional iron will have any marked effect.

The Failing Heart in Acute Infections

DR LOUIS M. WARFIELD, Milwaukee: The generally accepted view that the heart fails in acute infections is probably incorrect. So-called heart failure is actually peripheral collapse. The customary methods employed to stimulate the heart should be abandoned and measures used to combat the peripheral collapse.

DISCUSSION

DR J. W. SCOTT, Lexington, Ky.: I should like to ask Dr Warfield if he has had any experience with carbon dioxide by inhalation in the treatment of peripheral collapse. The triad of circulation volume, depth of respiration and general tonus, the latter actuating the venopressor mechanism, is of chief importance in the consideration of peripheral collapse. It is a remarkable fact that each one of the components of this triad is stimulated by the inhalation of carbon dioxide.

DR WARREN B. COOKSEY, Detroit: I should like to ask Dr Warfield whether he has tried concentrated solution of dextrose intravenously in this condition, or whether he would care to make any comment on its use in these patients.

DR MOSES BARON, Minneapolis: I should like to ask Dr Warfield how he would explain the apparent myocardial weakness following many acute infections. After influenzal and streptococcal infections I often find a definitely low cardiac reserve, as evidenced by dyspnea on slight exertion plus a rapid pulse. This must be due to a myocardial weakness. It is undoubtedly true that the greatest part of the cardiovascular effect is from peripheral collapse but there is also present a temporary change in the myocardium.

DR MORRIS H. NATHANSON, Minneapolis: Although it is true that the heart is usually not functionally impaired in infections, there is one infectious disease in which there is evidence that the myocardium is seriously damaged and in which the myocardial changes undoubtedly play the chief part in the outcome. This is diphtheria. Several years ago I carried out an electrocardiographic study of patients suffering from diphtheria and found marked changes. In certain cases these changes extend into convalescence and the only patients showing circulatory collapse were those who had the abnormal electrocardiograms. These electrocardiographic changes would return to normal after four to six weeks. I was also able to reproduce these abnormal electrocardiograms in cats by the injection of diphtheria toxin. I also carried out a study with the electrocardiograph in other infectious diseases and found that as compared with diphtheria, high grade electrocardiographic changes are relatively rare even when the patient shows signs of severe circulatory failure. These observations support the concept that the peripheral mechanism is most frequently the basis for the circulatory failure in most infectious diseases.

DR L. M. WARFIELD, Milwaukee: In answer to Dr Scott I have never tried carbon dioxide because I have always felt that what the heart needed was oxygen. I have used oxygen in cases of surgical collapse following operation. I have seen one patient, a young woman to whom 12 liters of fluid was given in twenty-four hours by means of the jejunal tube, the rectum and intravenous injection. She came out of the apparent death collapse and is well. That I have attributed to the enormous amount of fluid plus the oxygen. In reply to Dr Nathanson I specifically stated that diphtheria was one of the diseases that cause myocardial failure. His discussion is interesting. I think diphtheria, septic emboli and possibly rheumatic fever are the diseases more prone to cause myocardial failure. As to concentrated dextrose I have given it. The only objection to giving it as well as saline solution is that they leave the blood vessels rapidly. The difficulty has been that too little

saline solution has been given, the amount being 1,000 cc when it should have been 4,000. With regard to the question that after influenzal infections the myocardium is left in a very labile state, I think that one has to admit that I do not think that this is any argument against the fact that when these people die of so-called cardiac failure they die of peripheral collapse rather than of cardiac failure on the part of the myocardium, though the myocardium may be actually diseased. If the heart is beating too rapidly, the recovery period is so short that there is decreased circulation in the heart and anoxemia occurs. I do not know what one could do if one could stimulate the heart or what good it would do; the patient's condition is hopeless.

Clinical Experience with an Antitularens Serum

DR. LEE FOSHAY, Cincinnati. During the past two years, seventy patients with tularemia have been treated with an antitularens goat serum. The serum appears to possess therapeutic value as judged by the clinical responses obtained. A quantitative analysis of data from the treated group compared with those from 121 control patients confirms the clinical impression that significant changes in the course of the disease are due to the serum therapy. The mean duration of disease has been reduced by almost one half and the duration of adenitis has been diminished by more than one third.

Heart Movie The Electrocardiographic Registration of the Normal Heart Beat

DR. CLAYTON J. LUNDY, Chicago. This animated motion picture starts with a review of the anatomy of the heart and its conduction system. There follows the showing of the origin of the stimulating impulse in the sinus node and its spread over the entire heart simultaneously with the formation of the electrocardiogram. It includes the showing of auricular and ventricular systole and diastole correlated with the electrocardiogram, intra-auricular and intraventricular pressure, and the electrically reproduced heart sounds, together with the action of the aortic, mitral and tricuspid valves.

The Etiology of Felty's and Related Syndromes

DR. HARRY A. SINGER, Chicago. In 1924, Felty described the occurrences in five adult patients of a syndrome characterized by chronic deforming arthritis, splenomegaly, lymphadenophy, leukopenia and cutaneous pigmentation. None of the five patients were followed to autopsy. Felty offered two explanations for this unusual clinical syndrome: (1) that the manifestations are part of one pathologic process, (2) that the syndrome is merely a confusion of two separate clinical entities, i. e., arthritis and Banti's disease, occurring coincidentally in the same individual. Felty favored the first explanation chiefly on the basis of the law of probability. In 1932, Hanrahan and Miller recorded a case of Felty's syndrome in which splenectomy was followed by "markedly beneficial effects." The question of the nature of the underlying disease process was left *sub judice*. I have studied two adult patients in whom the clinical picture was that of Felty's syndrome. In both instances, cultures during life from the blood stream yielded *Streptococcus viridans*. Both patients died and at autopsy presented the typical bacteriologic and anatomic evidence of sepsis lenta. The evidence obtained in these two cases serves to account for the Felty syndrome, Chauffard-Still's syndrome and Still's disease on one common pathogenic basis. Furthermore, the evidence indicates that at least a certain number of so-called primary splenic anemias of the Banti type really represent instances of sepsis lenta.

DISCUSSION

DR. P. S. HENCH, Rochester, Minn. Chauffard in 1896 and Herringham in 1909 called attention to the association of arthritis in adults with splenomegaly and hepatomegaly. Anemia was not emphasized. In 1897, Still noted arthritis in children with anemia, enlarged lymph glands and enlarged spleen but didn't mention hepatomegaly. Others have since reported cases of arthritis variously presenting a reticulo-endothelial response, with leukopenia or leukocytosis. Felty's syndrome concerns itself with a chronic arthritis, anemia, enlarged glands and enlarged spleen, but the liver is not mentioned. While it is well to point out such variations, it seems unwarranted to give each combination a new name. As chronic infectious (atrophic) arthritis progresses anemia is expected

and a moderate glandular enlargement may be viewed without concern. If the glands are immoderately enlarged, biopsy may reveal, however, an associated tuberculosis, Hodgkin's disease or even cancer. One should not expect to find splenomegaly in arthritis oftener than in 1 per cent of the cases or less. In about one half of the cases I have seen in which splenomegaly has been found the liver has also been enlarged. I do not know whether these reactions represent a complication or a defense mechanism on the part of the reticulo-endothelial system. If the lymph glands are the first line of defense, the spleen and liver the secondary defenses, one should think twice before advising splenectomy. Only temporary benefit was noted in one such case, probably the nonspecific temporary improvement any surgical operation may provide. The studies of Singer and of Felty, I believe, help to support the infectious theory, for such tissue responses, whether they are complications or defense reactions, are more suggestive of reaction to infections than to a metabolic or endocrine affair.

DR. H. M. CONNER, Rochester, Minn. There are certain indications for splenectomy that nearly every one accepts. One is the presence of Banti's disease, another, purpura hemorrhagica, and still another, hemolytic icterus. In these diseases, especially the latter two, splenectomy usually gives symptomatic cure. I doubt whether any disease in which blood cultures are positive, such as Dr. Singer showed today, will respond to splenectomy. It seems likely that the spleen may be a reservoir of bacteria in these cases, but to remove that reservoir in the presence of such widespread distribution of the organisms might be detrimental and almost certainly would not be beneficial.

DR. C. W. BALDRIDGE, Iowa City. I have seen two patients with a syndrome similar to that described by Felty. These two patients may have had Banti's disease with arthritis, since one had definite cirrhosis of the liver and both developed ascites. Does Dr. Singer wish to imply that this disease began eight years before death as a bacteremia or septicemia or that the latter was superimposed on a disease characterized by chronic leukopenia?

DR. M. A. BLANKENHORN, Cleveland. The chairman is interested in the fact that in both patients the "findings in the heart were the same" and that Aschoff bodies were described only in the first case. Perhaps Dr. Singer omitted mentioning Aschoff bodies in the second case. If Aschoff bodies were found only in the first case, will Dr. Singer say whether he and Dr. Jaffe consider the first case as presenting rheumatic fever and the second case as not presenting rheumatic fever?

DR. HARRY SINGER, Chicago. I agree with Dr. Hench that splenectomy in the presence of a sepsis is likely to do much more harm than good. In suggesting that the spleen might act as the focus of infection I was merely attempting to reconcile or explain the improvement in Hanrahan and Miller's patient following splenectomy. Whether or not the immediate beneficial results will continue remains to be seen. The question asked by Dr. Baldrige as to whether the sepsis demonstrated at autopsy was the primary disease is pertinent. The evidence for assuming that the sepsis lenta was of long standing in the cases presented is indicated by the character of the changes involving particularly the reticulo-endothelial system. These changes are the ones observed in cases of subacute bacterial endocarditis having an established duration of many months or even several years. Furthermore, the histologic features observed in the extirpated spleen in the case described by Hanrahan and Miller are practically identical with those found in the spleens obtained at autopsy in my two cases. Splenectomy was performed by Hanrahan and Miller while their patient was comparatively well. Dr. Blankenhorn asked regarding the specificity of Aschoff nodules found in my first case. Dr. R. H. Jaffe, our pathologist, has accumulated convincing evidence to show that the same organism can produce subacute bacterial endocarditis and rheumatic fever. The type of lesion produced is dependent on the defense reaction of the host rather than on a selective strain or type of streptococcus. I have seen Aschoff bodies in several cases of subacute bacterial endocarditis, sepsis lenta and scarlet fever in which there was no reason to assume the presence of a coexisting rheumatic infection. Aschoff bodies cannot therefore be considered pathognomonic of rheumatic fever.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

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Human Embryo of Presomite Period from Uterine Tube J E Kindred Charlottesville Va—p 221
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Observations on Structure of Vagus Nerve S W Ranson, J O Foley and C D Alpert Chicago—p 289
Development of Young Rabbit Blastocysts in Tissue Culture and in Grafts A J Waterman Brooklyn—p 317

Archives of Surgery, Chicago

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- Malignant Tumors of the Male Breast M P Neal, Columbia Mo—p 427
Surgery of Sesamoid Bones of the Great Toe Anatomic and Clinical Study with Report of Forty One Cases G A L Inge and A B Ferguson New York—p 466
The Curling Ulcer Study of Intestinal Ulceration Associated with Suprarenal Damage C W McLaughlin Philadelphia—p 490
Points in the Surgery of the Frontal Lobes of the Brain J R Learmonth and H C Voris Rochester Minn—p 506
Review of Modern Treatment of Burns J P Barnes Houston Texas—p 527
Iodized Oil in Bronchiectasis Including a Study of Two Cases Following Lobectomy J A Weinberg Omaha—p 545
*Spondylolisthesis and Prespondylolisthesis S Kleinberg New York—p 565
*Calcification of the Thoracic Mouse Carcinoma (in Vivo) by Means of Viosterol J W Spies Peiping China and G P Lyman San Francisco—p 588
Review of Urologic Surgery A J Scholl Los Angeles E S Judd Rochester, Minn L D Keyser Roanoke Va J Verbrugge Antwerp, Belgium A A Kutzmann Los Angeles A B Hepler Seattle, and R. Gutierrez New York—p 602

Spondylolisthesis and Prespondylolisthesis—Kleinberg states that prespondylolisthesis and spondylolisthesis are due to a congenital defect in the laminae of a lumbar vertebra, as a result of which the posterior arch of the vertebra is connected to the body only by fibrous tissue. The diagnosis of prespondylolisthesis is made by finding a defect in the laminae of the lumbar vertebra without any displacement of the body. The clinical symptoms include pain and weakness of the back and a variable degree of disability. A marked lordosis should make one suspect the existence of a prespondylolisthesis. When the diagnosis of prespondylolisthesis is established, fusion of the vertebrae should be advised for the purpose of preventing an actual dislocation. Spondylolisthesis is now being recognized with increasing frequency as an important cause of disability of the back. The signs, symptoms and roentgen observations of spondylolisthesis vary in degree. The subjective symptoms are rarely in direct proportion to the degree of bony deformity. Spondylolisthesis may exist for many years without causing symptoms or disability. When symptoms are present they may be relieved by external support of the back or in the more resistant cases by fusion of the vertebrae. In all cases in which operations were performed the posterior arch was found to be abnormally movable and minimally connected to the vertebral body only by fibrous tissue. The patients operated on were relieved of their symptoms.

Calcification of Mouse Carcinoma with Viosterol—Spies and Lyman investigated whether viosterol might produce calcification of an actively growing carcinoma and if so what effect it and the generalized deposition of calcium in the viscera might have on the biologic behavior of the tumor and its host.

Results demonstrate that abnormal amounts of calcium were deposited in the experimental tumor and in the viscera of mice that were given intraperitoneal injections of viosterol over a period of from twenty-nine to sixty-one days. The longer the interval of time the greater was the intensity of calcification. The authors also observed that the mice which were given only the usual diet did not show calcium by the von Kossa histologic method except to a minor degree in two instances, these being limited to the tumor and probably due to viosterol secured by coprophagy. Necrosis of the neoplasms seemed as marked in the control animals as in those which had been given large amounts of viosterol. Sesame oil alone had no effect on the deposition of calcium in either the neoplasm or the organs. The natural course of the Thoracic carcinoma did not seem to be influenced significantly by the giving of large amounts of viosterol. After approximately thirty-four days the toxic effects of the activated viosterol were manifested in obvious derangements in the general condition of the animals.

Arkansas Medical Society Journal, Little Rock

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- Birth Injuries S B Hinkle Little Rock—p 77
The Present Status and Future Possibilities of Electrosurgery J A Foltz, Fort Smith—p 82

Canadian Medical Association Journal, Montreal

29 227 348 (Sept) 1933

- Experimental Intestinal Obstruction N B Taylor, C B Weld and G A Harrison, Toronto—p 227
Recent Advances in Physiology of Capillary Circulation F R Miller, London Ont—p 237
*Kitten Carriers of Microsporion Felineum and Their Detection by Fluorescence Test A M Davidson and P H Gregory Winnipeg Manit—p 242
Intrapleural Pneumolysis with Galvanocautery E C James Hamilton, Ont—p 247
Resuscitation of New Born Babies Showing Narcosis E Shute and M E Davis Chicago—p 252
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Sterilization of the Feebleminded H A Bruce Toronto—p 260
Prevention of Neonatal Mortality A Brown, Toronto—p 264
Essential Constipation Its Diagnosis and Treatment C J Tidmarsh Montreal—p 269
*Blood Tests in Assessment of the Constitutional State in Tuberculous Patients S L Cummins Cardiff Wales—p 275
Practical Application of Our Knowledge of the Biliary System D S MacNab and E P Scarlett Calgary Alta—p 281
Achalasia of the Cardia (Cardiospasm) G A Wainwright Owen Sound, Ont—p 287
Cervical Cancer W A Scott Toronto—p 290
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Congenital Hernia of the Ovary and Tube into the Canal of Neck. Report of Case A E Harbeson Kingston, Ont.—p 295

Kitten Carriers of Microsporion Felineum—Davidson and Gregory state that in approximately half of the outbreaks due to Microsporion felineum some evidence indicated that infection had occurred from a cat or a dog. A boy, aged 5 years, became infected with M felineum. The first lesions appeared from two to three weeks after he had been given an apparently healthy kitten. When the kitten was examined under ultraviolet rays passing a filter of Wood's glass, fluorescent hairs were observed which proved to be infected with the same species of fungus as that infecting the boy. The patient, while undergoing treatment was given a healthy kitten to play with. In from three to four weeks this animal developed a typical ringworm lesion on the nose. A third kitten was artificially inoculated in the ear with M felineum. After the resulting lesion had healed a few fluorescent infected hairs remained around the eyes during three months and the animal is considered to have been, during this period a ringworm carrier. The authors suggest the extension of the fluorescence test to detect Microsporion infection in cats and kittens as a practical prophylactic measure.

Blood Tests in Tuberculous Patients—Cummins devised a micro method for the sedimentation test which is applicable to a sample of blood collected by pricking a finger. The same sample of citrated blood is used after the reading of the height of the blood cell column at the end of one hour, for the estimation of the total leukocytes, and the author has satisfied himself that the count remains practically unaltered for at least twenty-four hours. The enumeration of lymphocytes

and monocytes is carried out on a dry film stained by Leishman's method and is combined with the estimation of the von Bonsdorff (Arneth) count. He claims that these methods afford a valuable amplification to the grading of cases undergoing sanatorium treatment, and that they are invaluable in estimating the results of gold therapy and other new methods of treatment.

Journal of Bacteriology, Baltimore

26 229-330 (Sept.) 1933

- Stability of Cultures of *Rhizobium* Lois Almon and I. L. Baldwin Madison Wis.—p. 229
Studies in Microsurgical Technique J. A. Reyniers Notre Dame Ind.—p. 251
*Bacterial Variation with Especial Reference to Pleomorphism and Filtrability L. F. Rettger and Hazel B. Gillespie New Haven Conn.—p. 289
Reaction of Antisera for *Bacillus Actinoides* J. B. Nelson Princeton N. J.—p. 321
Fermentation of Sodium Malonate as Means of Differentiating Aerobacter and *Escherichia* E. Iefson Baltimore—p. 329

Bacterial Variation—Rettger and Gillespie state that *Bacillus megatherium* is extremely susceptible to changes in environment, giving rise to morphologic types that vary over a wide range from the more nearly "normal" to most extreme forms. On the transfer of cultures that have undergone such cellular transformation to the usual fresh culture medium the organism again assumes its regular cell outline and orientation. In old cultures pronounced autolysis is another important feature, and at times empty cells may be seen which resemble flattened tubes or 'sausage skins' and which are firm and highly resistant to mechanical injury. These must be regarded as definite cell envelopes or membranes. Repeated attempts to demonstrate the occurrence of a filtrable phase or phases in *Bacillus megatherium*, *Alcaligenes abortus* and *melitensis* and the organisms commonly present in raw sewage resulted in failure.

Journal of Biological Chemistry, Baltimore

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- Chemical Composition of the Human Fetus M. H. Givens Chicago and Icie G. Macy Detroit—p. 7
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Analysis of Chloride in Tissues F. W. Sunderman and Priscilla Williams Philadelphia—p. 279
Dietary Factor Concerned with Carbohydrate Metabolism L. G. Wesson and Florence C. Murrell Nashville Tenn.—p. 303
Studies on Purine Metabolism II. Fate of Guanine in Organism of Dog F. W. Allen and J. R. Cerecedo Berkeley Calif.—p. 313
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Journal of Clinical Investigation, New York

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- Studies on the Action of Diuretics II. Effect of Salyrgan on Water Content of Plasma as Measured by Refractive Index H. L. Schmitz Chicago—p. 741
Studies in Congestive Heart Failure XVIII. Critical Study of Methods for Determining the Cardiac Output in Patients with Cardiac Disease A. Grollman, B. Friedman, G. Clark and T. R. Harrison Nashville Tenn.—p. 751
Physiologic Disturbances During Experimental Diphtheritic Intoxication I. Blood Sugar, Lactic Acid and Nonprotein and Amino Acid Nitrogen H. Yannet and D. C. Darrow New Haven Conn.—p. 767

- Id. II. Hepatic Glycogenesis and Glycogen Concentration of Cardiac and Skeletal Muscle H. Yannet and D. C. Darrow, New Haven Conn.—p. 779
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Studies of Total Pulmonary Capacity and Its Subdivisions I. Normal Absolute and Relative Values A. Hurtado and C. Boller, Rochester N. Y.—p. 793
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Id. IV. Preliminary Observations on Cases of Pulmonary Emphysema and of Pneumothorax A. Hurtado, W. W. Fray and W. S. McCann Rochester N. Y.—p. 833
*Effect of Digitalis on Venous Pressure of Normal Individuals D. A. Ryland San Francisco—p. 847
*Comparison of Creatinine and Urea Clearance Tests of Kidney Function J. M. Hayman Jr., J. A. Halsted and I. E. Seyler Cleveland—p. 861
Experiments on Relation of Creatinine and Urea Clearance Tests of Kidney Function and the Number of Glomeruli in the Human Kidney Obtained at Autopsy J. M. Hayman Jr. and S. M. Johnston Cleveland—p. 877
*Serum Treatment of Hemolytic Streptococcus Pneumonia H. I. Amoss and E. B. Craven Jr. Durham N. C.—p. 885
Cystine Content of Finger Nails in Pellagra S. A. Payne and W. A. Perlzweig Durham N. C.—p. 899
Production of Experimental Plaut-Vincent's Angina in the Dog Helene Wallace, E. W. Wallace and O. H. Robertson Chicago—p. 909
Effects of Alternate Suction and Pressure on Blood Flow to the Lower Extremities L. M. Jandis and J. H. Gibbon Jr. Philadelphia—p. 925

Effect of Digitalis on Venous Pressure—Ryland made thirty-seven control and eighty-two experimental observations on the venous pressure before and after the administration of digitalis (in single full doses) in nine trials on eight normal subjects. He found that, in normal human beings and dogs, digitalis causes a decreased cardiac output and a decreased venous pressure. The greatest effect occurs at about twenty-four to thirty-two hours after the administration of the drug, with a return to normal levels in from seventy-two to ninety-six hours. The observed changes support the hypothesis that digitalis owes its action to a peripheral effect, probably on the hepatic vein radicles, in reducing the return flow of the blood to the heart. The hypothesis that the digitalis action follows changes in cardiac tone is negated by all available data. Digitalis bradycardia is not due to the fall of venous pressure. The slowing of the heart, by causing the normal increase in venous pressure, partially conceals the effect of digitalis in reducing the return flow of the blood to the heart.

Creatinine and Urea Clearance Tests—In order to estimate the range of creatinine clearance in normal persons under conditions of hospital and private practice Hayman and his associates performed fifty-nine clearance tests on fifty-nine apparently healthy persons. In forty-five, only a single test was made and in fourteen from two to twenty-one clearances were determined. The authors compared the creatinine and urea clearance tests in normal persons and in patients presenting a history of chronic interstitial nephritis. The mean creatinine clearance in the 130 observations of the fifty-nine normal subjects was 148 cc per minute. The variability of the two tests from the mean normal was approximately the same. In patients presenting chronic interstitial nephritis the creatinine and urea clearance tests are generally equally reduced in relation to the average normal. The authors were unable to demonstrate any practical advantage in the creatinine test to compensate for its greater technical difficulty.

Serum Treatment of Streptococcic Pneumonia—Amoss and Craven report eight cases of β hemolytic streptococcus pneumonia in which antistreptococcus serum was administered and all the patients recovered. Three of the four patients treated by intravenous and intramuscular injections of the serum developed streptococcic empyema. Instillation of the serum into the pleural cavity in two patients presenting effusion apparently prevented infection of the fluid in one, and in the other it cleared the infected fluid of organisms in forty-eight hours. Instillation of the serum into the pleural cavity in two patients having empyema cleared the fluid of the hemolytic streptococcus but not of the pneumococcus, group IV, which appeared simultaneously with the disappearance of the streptococci. The results of tests by precipitins, toxallergen neutralization and mouse protection tests suggest a rational immunologic basis for specific serum treatment.

Journal of Comparative Neurology, Philadelphia

58 1310 (Aug 15) 1933

- The Amphibian Forebrain VI Necturus C J Herrick Chicago—
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The Epibranchial Placode of the Facial Nerve in Amblystoma Jeffersonianum F L Landacre, Columbus, Ohio—p 289

Journal of Immunology, Baltimore

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- Test for Therapeutic Value of Antipneumococcus Serum K Coodner New York—p 199
Local Organ Hypersensitivity V Fate of Antigen and Appearance of Antibodies During Development of Hypersensitivity in Rabbit Eye Beatrice Carrier Seegal D Seegal and Devorah Khorazo New York—p 207
Id VI Indirect Method for Its Production in Rabbit Eye Beatrice Carrier Seegal and D Seegal New York—p 221
Studies on Trachoma III Susceptibility of Rhesus Monkeys to Conjunctival Infection by Bacteria Granulosis Under Various Experimental Conditions C Weiss St Louis—p 227
Id IV Direct Transmission of Human Trachomatous Lesions to Various Animals C Weiss St Louis—p 247
Id V Agglutinability of Bacteria Granulosis in Serums of Trachoma Patients C Weiss with assistance of G B Bowers St Louis—p 259
Precipitin Reaction in Yellow Fever T P Hughes New York—p 275

Precipitin Reaction in Yellow Fever—According to Hughes, serums taken from monkeys recently recovered from severe yellow fever infections possess a precipitin capable of reacting with a precipitinogen that occurs in the blood of monkeys during the period of acute illness. This precipitinogen is not the virus of yellow fever but appears to be associated with a protein of the albumin fraction. Its concentration reflects the severity of illness. It disappears with recovery after stimulating the formation of a precipitating antibody. This resulting precipitin is entirely independent of the protective antibody resulting from an infection. A similar precipitin occurs in the serum of human beings recently recovered from a severe yellow fever infection. This precipitin reacts with the precipitinogen occurring in the blood of monkeys during the acute phase of the fever.

Journal of Pediatrics, St Louis

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Allergic Epilepsy J Klein Chicago—p 505
Use of Whole Citrated Blood Intramuscularly in a Measles Epidemic R M Ford Providence R I—p 509

Congenital Osteosclerosis—Robertson presents a typical case of congenital osteosclerosis in which the striking feature is the large amount of vitamin D which the child received. The idea that osteosclerosis may represent the extreme in the healing of a rachitic process has been advanced but is generally discounted since rachitic changes have not been demonstrated in these cases. The administration of vitamin D may accelerate the progress of the condition. In this connection the chemistry of the blood is of interest. Two determinations of phosphorus gave low values and the second determination after thirteen months without added vitamin D in the diet gave a value suggestive of active rickets. The author refutes the possibility that changes of the bone in this condition are secondary to or simultaneous with changes of the bone marrow by the fact that fairly extensive osteosclerosis has been reported in adults without anemia and with no abnormality in the blood picture. The blood picture of the anemia of congenital osteosclerosis

has many features in common with the blood picture of Cooley's erythroblastic anemia. In both there is a gradually increasing anemia in the face of evidence of intense stimulation of the bone marrow and regeneration but in the former there is increased calcification and, in the latter, decreased calcification. The situation suggests the possibility that the two conditions may be closely related and that osteosclerosis may be secondary to osseous rarefaction. The author believes that, in Moore's adult case of sickle cell anemia, the skull showed the characteristics of the skulls described by Cooley, while the short bones showed osteosclerosis. An analysis would seem to indicate that intense stimulation of the bone marrow may cause rarefaction of the bone that osteosclerosis may follow osseous rarefaction that osteosclerosis may occur without demonstrable changes of the bone marrow, but that the weight of evidence favors the conception that sclerosis of the bone or petrification in congenital osteosclerosis is the primary condition and that changes affecting the bone marrow and the hematopoietic system are secondary.

Phrenic Nerve Paralysis—A study by Stein of nine cases of phrenic nerve paralysis associated with Erb's paralysis discloses that the great majority of cases are on the right side. The prognosis is favorable as regards restoration of function in the early days of life but appears to be less so if treatment is delayed from two to three months. Even then the prognosis as to life is not unfavorable as shown by the cases of Remic and Epstein. Paralysis of the phrenic nerve should be looked for in all cases of Erb's paralysis. The author suggests that in view of Kofferrath having been the first to describe the syndrome of Erb's paralysis with phrenic nerve paralysis the name 'Kofferrath syndrome' be given to the condition.

Myelosarcomatosis—Kunstadter reports the case of a child of 6½ in whom the essential features were multiple malignant tumors throughout the skeletal system, gastro-intestinal tract, kidneys, pancreas and dura mater, which histologically gave the appearance of undifferentiated myeloid tissue. The blood contained many atypical cells that resembled young lymphocytes but may have been myeloid in origin. The clinical and pathologic diagnosis in this case presented many difficulties. The appearance of multiple tumors in the skull, proptosis, roentgen evidence of rarefaction and destruction in the membranous and long bones, marked anemia, severe emaciation and cachexia suggested the possibility of generalized sarcomatosis (the primary focus unknown), chloroma, multiple myeloma, sympathetic blastoma of the Hutchinson type, generalized xanthomatosis (Christman's syndrome), lymphosarcoma, atypical leukemia and leukosarcomatosis. The author believes that this case falls into the group of complicated leukemia and appears to substantiate the blastomatous nature of certain forms of leukemia.

Journal of Urology, Baltimore

30 271 380 (Sept) 1933

- Apothecia of Urology C R Livermore Memphis Tenn—p 271
Bacillus Proteus Pyonephrosis with Blood Infection. Review of Literature and Report of Case with Operation and Recovery D W Mackenzie and A B Hawthorne Montreal—p 277
Polycystic Disease in Premature Infant H G Beeson Philadelphia—p 285
Typhoid Pyonephrosis Report of Case P J Kahle and H T Beacham New Orleans—p 299
Relative Activity of Various Portions of Excised Ureter of the Dog P P T Wu Rochester Minn—p 307
Pyo-Urachus Report of Case A R Stevens New York—p 319
Cryptorchidism Treatment and Results in One Hundred Cases A S Counsellor Rochester Minn—p 327
Anorchidism (Absence of the Testicle) Case Report M Thorek and P Thorek Chicago—p 335
Perineal Testicle M Muehrst Philadelphia—p 353
Primary Bladder Carcinoma Within the Scrotum C Carroll and R C Jacobs St Louis—p 357
Treatment of Urethral Strictures of Small Caliber by New Method Preliminary Report L W Riba and J F Sanner Chicago—p 361
Cutaneous Horns of the Penis H H Goldstein Elizabeth N J—p 367
Plastic Operation on Penis Case Report I I Veseen and C P O'Neill Chicago—p 375
New Shield for Eclipte Sheath M A Nicholson Duluth Minn—p 379

Pyo-Urachus—Stevens reports a case of pyo-urachus which differs from most instances of inflammation of the urachus in that 1. There was no opening leading to the umbilicus or to the bladder. 2. The urachus had not retracted downward as usual but still remained attached to the umbilicus in adult life.

3. The urachus had remained patent at its upper portion, as proved by the islands of epithelium found, whereas it had apparently become merely a cord of smooth muscle and fibrous tissue at the lower end, with no sign of epithelium or of a lumen.

4. The inflammation was confined to the upper part of the urachal structure, with no involvement of the bladder end.

Treatment of Urethral Strictures—Riba and Sanner feel that small caliber strictures can be enlarged easily with only one electrosection treatment, that is, the introduction of a special electro-urethrotome into any strictured urethra, provided a filiform bougie can be passed. The urethrotome carries a cutting loop, which may be expanded to a desired caliber just proximal to the stricture or strictures. The cutting current is then turned on and the urethrotome withdrawn. There is no shock or pain. There is no active hemorrhage following this operation. The authors do not recommend this procedure to displace the use of urethral sounds. They believe that the usual course of urethral dilatations may be materially shortened if the strictures of small caliber are sectioned first, and they have found that subsequent sounds may be passed readily and without apparent difficulty. There has not been any indication that more scar tissue is likely to form following an electro-urethrotomy. In cases of strictures and infiltrations of large caliber this procedure is of little value. In a patient who has a strictured urethra and for some reason or other (renal colic, hematuria or injuries) needs an immediate cystoscopy, they believe that this method of handling the stricture would be the procedure of choice. From an economic standpoint, many patients can be kept out of a charity-bed hospital or their hospital stay may be reduced to a minimum of a day or two.

Kentucky Medical Journal, Bowling Green

31 395 458 (Sept.) 1933

- Benign Tumors of the Bronchus with Especial Reference to Early Diagnosis. Two Case Reports. P. A. Turner. Louisville—p. 423.
- Leukemia. Blood Picture. G. S. Bottorff. Louisville—p. 427.
- Id. Its Etiology and Pathology. W. H. Allen. Louisville—p. 430.
- Id. Clinical Picture of Leukemia. H. Mahaffey. Louisville—p. 42.
- Id. Treatment of Leukemia. F. G. Speidel. Louisville—p. 433.
- Shall Medicine Become Socialized? O. P. Nuckols. Pineville—p. 439.
- Acute Intestinal Obstruction. C. Baron. Covington—p. 441.
- Role of the County Medical Society. M. A. Gilmore. Hopkinsville—p. 445.
- Childhood Tuberculosis. J. W. Bruce. Louisville—p. 448.
- Pellagra. J. H. Hendren. Pineville—p. 455.

Michigan State M. Society Journal, Grand Rapids

32 479 530 (Sept.) 1933

- Heart Disease and Pregnancy. B. I. Johnstone. Detroit—p. 479.
- Review of Dietary Treatment of Psoriasis Including Brief Discussion of Possible Endocrine Etiology. R. C. Jamieson. Detroit—p. 486.
- Six Centuries of Medical Progress in Sweden. B. H. Larsson. Detroit—p. 490.
- Recent Conceptions of Obesity. A. A. Wittenberg. Detroit—p. 500.
- Hemangiofibroma of the Uterus. Report of Case. I. Johns. Ionia—p. 504.
- Selective Type of Thoracoplasty Operation. W. A. Hudson. Detroit—p. 506.

Minnesota Medicine, St. Paul

16 555 608 (Sept.) 1933

- The Menace of the Tuberculous Teacher. L. S. Jordan and A. B. Jordan. Granite Falls—p. 555.
- Adequate Therapy of Syphilis. S. E. Sweitzer. Minneapolis—p. 557.
- Occurrence of Tularemia in Minnesota in 1921. Report of Two Cases. One Fatal with Necropsy Report. H. R. Hartman. D. C. Beaver. Rochester and R. G. Green. Minneapolis—p. 559.
- High Carbohydrate Low Calory Diet in the Treatment of Diabetes Mellitus. B. A. Watson. Minneapolis—p. 566.
- General Local Spinal and Balanced Anesthesia. J. S. Lund. Rochester—p. 572.
- *Roentgen Treatment of Plantar Warts. E. T. Ledy and E. Johnson. Rochester—p. 574.

Roentgen Treatment of Plantar Warts—Ledy and Johnson state that before roentgen treatment is given the superficial keratotic layers should be pared off. A small hole is punched in a piece of lead foil 1 mm. thick and enlarged to the size of the wart. The lead foil is strapped to the foot with adhesive tape, lead rubber is used to protect the outlying regions. A mechanical rectifier and Coolidge tube are used. Low voltages, 80 peak kilovolts and 100 peak kilovolts without filter are most frequently employed, 100 peak kilovolts or 110 peak kilovolts are occasionally used with 2 mm. of alumi-

num filter, and 135 peak kilovolts with 4 mm. of aluminum filter for the rare, large, infiltrating lesions. The focal skin distance used is 9, 12 or 16 inches. The time is changed proportionately. The milliamperage employed is 5, 6 or 8. The total dose varies greatly from less than 0.7 to 5 skin erythema doses (192 to 1848 roentgens). After the treatment is given, a pad is placed around the wart to relieve pressure. This pad is changed twice a week, and 20 per cent sulphonated bitumen in hydrous wool fat is often employed to keep the tissue soft. With lighter doses the treatment is repeated at intervals of one or two weeks for two or three times, but when the heavy doses are used the treatment is not repeated before two months, and then only once if indicated.

New England Journal of Medicine, Boston

209 419 470 (Aug. 31) 1933

- Fever Therapy and Other Recent Developments in Physical Therapy. W. H. Schmidt. Philadelphia—p. 419.
- Pneumoconiosis. Importance of Accuracy in Roentgenologic Interpretation. H. K. Pancoast and E. P. Pendergrass. Philadelphia—p. 425.
- *Use of Surgical Diathermy (or Endothermy) in Separating Pleural Adhesions in Cases of Pulmonary Tuberculosis. G. L. Stivers. Worcester, Mass.—p. 437.
- Resumé of Some Physiologic Reactions to High External Temperature. A. V. Bock and D. B. Dill. Boston—p. 442.
- Some Undesirable Tendencies in Using an Etiologic Classification of Heart Disease. H. A. Christian. Boston—p. 444.
- Pernicious Anemia. A Conditioned Deficiency. Observations on Effects of Administration of a Substance Rich in Vitamin B Complex. J. E. Connery and I. J. Goldwater. New York—p. 446.

209 471 518 (Sept. 7) 1933

- Progress in the Study of Internal Secretions. J. C. Aub. Boston—p. 471.
- Present Status of Our Knowledge of Ovarian Hormones. H. S. Finkel. Boston—p. 473.
- Hyperparathyroidism. Its Diagnosis and Exclusion. F. Albright. Boston—p. 476.
- Certain Functions of the Adrenal Cortex. F. A. Hartman. Buffalo—p. 480.
- Present Status of Diseases of Hypophysis. T. J. Putnam. Boston—p. 486.
- Problem of Otitis Media and Mastoiditis in Scarlet Fever. J. I. Abrams. Boston and S. Friedman. Providence, R. I.—p. 494.
- Toxemia of Pregnancy. Treatment by Fluid Limitation and Dehydration. J. Lentine. Boston—p. 500.

Treatment of Pulmonary Tuberculosis—Stivers states that a complete collapse is obtained in approximately 10 per cent of all cases of pulmonary tuberculosis treated by artificial pneumothorax. In another 10 per cent a selective compression of the diseased areas gives satisfactory results. In the remaining 80 per cent, compression of the lung is ineffectual owing to pleural adhesions which hold the lung to the chest wall. It has been found that in many of these cases the operative procedure of intrapleural pneumolysis, or cutting of these adhesive bands, gives the desired collapse. The author is using a thoracoscope with the lens at an angle of 45 degrees, directed more toward the tip of the instrument. With his thoracolum light can be guided to any part of the cavity in the chest and in combination with the unlighted thoracoscope, can be used to determine the consistency of the bands. Two principal types are in use for severing the adhesions: the galvanocautery, a hot cutting point, and the endotherm, a cold coagulating and cutting electrode. The color of all adhesive bands is significant. In case an adhesion contains lung tissue it is preferable to coagulate an area around the insertion of the band on the chest wall at the first operation, and at a later operative date complete the cutting of the adhesion. In coagulating large adhesions it is advisable to use a comparatively weak current for a longer period rather than a stronger current for a brief time, for the latter current might occasion quick dehydration or even carbonization of the tissue. This would limit the field of desired coagulation and possibly be instrumental in the causation of secondary hemorrhage. The majority of adhesions are noted at the apex, posteriorly or a few centimeters below this location, then at the posterior lateral wall and last at the anterior wall. Occasionally a band holding the lung to the diaphragm is defined and is severed with difficulty, owing to the motion of the diaphragm. The stringlike fibrous band, the short thick fibrous band and the broad fan-shaped adhesion can be destroyed if they are not complicated by blood vessels, lung substance, caseous nodes or extension of the formation of a cavity into the band.

New York State Journal of Medicine, New York

33 975 1024 (Aug 15) 1933

- Care of the Cancer Patient D Quick New York—p 975
Endocrinologic Problems in General Practice of Medicine M A Goldzieher, Brooklyn—p 985
Toxic Action of Metals in Alopecia Areata C N Myers B Throne and J Kingsbury, New York—p 991
What the Orthopedist Can Do for the Arthritic J P Stump New York—p 998
Sulpharsphenamine in Vincent's Angina H J Harris Westport—p 1000

Sulpharsphenamine in Vincent's Angina.—Harris states that in about 500 injections of sulpharsphenamine of various brands, given to patients with Vincent's angina during the 1932 epidemic, no noticeable reactions occurred except for an occasional patient who was actively nauseated or vomited during or immediately after the injection. Since reporting the series, the author has had five cases of toxicity and reactions, which he reports. These cases occurred within a few months, with the same technic and with various brands of sulpharsphenamine. In the many sporadic cases of a less severe and less infectious such as potassium chlorate, sodium perborate and their flavored proprietary preparations, and since the disease may be so serious in some of its manifestations, the author has continued to use the intravenous injection of sulpharsphenamine mentioned in his original communications, realizing the possible reactions that might occur. It is unsafe to use this drug unless one is prepared to administer sodium thiosulphate intravenously at the first sign of a severe reaction or advancing arsenical dermatitis. With proper precautions, sulpharsphenamine can be used with reasonable safety in intractable cases of Vincent's angina, as in syphilis. It is essential to keep the patient under observation for at least fifteen minutes after the injection, to give sodium thiosulphate when indicated, and to be prepared for late reactions, such as dermatitis, which are successfully treated if seen at once.

Pennsylvania Medical Journal, Harrisburg

36 895 1016 (Sept.) 1933

- Intra Ocular Tumors B Samuels New York—p 895
Successful Treatment of Hay Fever and Pollen Asthma A Sterling Philadelphia—p 899
Angina Pectoris Its Possible Causes and Treatment J B Wolfe Philadelphia—p 901
Compulsory Health Insurance L L Lay Pittsburgh—p 904
Responsibility in the Delinquent Child D G Davidson Philadelphia—p 908
Role of the Family Doctor in the Cancer Problem F B Utley Pittsburgh—p 911
Medical Aspects of Social Hygiene in Delaware County Pennsylvania Report of Study T Clark and Lida J Usilton Washington D C—p 914
Pituitary-Thyroid Syndrome Associated with Calcification of the Pituitary Body Case Report G S Finkfield Bedford Pa—p 916
Profit and Loss of Modern Medicine V P Pisula Exerson Pa—p 917
Sclerema Neonatorum Case with Recovery G J Feldstein Pittsburgh—p 921
Medical History of Lehigh County W A Hrusman Jr Allentown Pa—p 923

Pituitary-Thyroid Syndrome.—Enfield reports calcification of the pituitary body in a Negro of 17 who complained of drowsiness noticed four years ago. This has continued and for the past four months the somnolence has been more pronounced. At times the patient noticed fullness and heaviness in the head and occasional blurring of vision. There was obstruction of the right nostril and a granular pharyngitis. The thyroid was readily palpated and gave a fibrous resistance. Examination showed the lungs and heart to be normal. Blood pressure was 90 systolic and 70 diastolic, with a pulse rate of 60. Ophthalmoscopic examination showed normal fundi with vision 5/15 in the right eye and 5/9 in the left. A roentgenogram of the skull showed the sella turcica to measure 14 by 65 mm. The sella was traversed by a calcified network and the clinoids were joined by a bony bridge. The basal metabolic rate was minus 17.8 per cent. The blood sugar was 97 mg per hundred cubic centimeters rose to 155 mg in one hour and fifteen minutes after the ingestion of 150 Gm of dextrose and returned to 105 mg within two hours and fifteen minutes. No sugar was found in the urine. Urinalysis tests of the renal function blood counts Wassermann reaction and the fluid intake and output were normal. Treatment consisted of thyroid extract

006 Gm with pituitary substance 0.12 Gm in a capsule three times a day. The patient was under observation for eight weeks and when last seen had been working as a stevedore, entirely free from drowsiness. Neither trauma nor tuberculosis seemed active.

Public Health Reports, Washington, D C

48 1069 1094 (Sept. 1) 1933

- Incidence of Endemic Gorter in Northeastern Germany Note R Olesen—p 1074
Technic for Routine and Experimental Feeding of Certain Ixodid Ticks on Guinea Pigs and Rabbits W L Jellison and C B Philip—p 1081
Comparability of Sickness Records of Public Utilities D K Brundage—p 1095
Effect of Calcium on Transplanted Mouse Tumors M J Shear—p 1103

Rhode Island Medical Journal, Providence

16 129 144 (Sept.) 1933

- Modern Ideas in Regard to Epilepsy W A Hughes Providence—p 129
Congenital Dislocation of the Hip J Ridlon Newport—p 135

Surgery, Gynecology and Obstetrics, Chicago

57 1146 (July) 1933

- Kidney Pelvis Normal Variations in Their Shape and Flow with Possible Pathologic Significance D K Rose W G Hamm, S Moore and H M Wilson, St Louis—p 1
Protection of Peritoneum Against Infection B Steinberg Toledo Ohio and H Goldblatt, Cleveland—p 15
Epitheliomas of Lower Rectum and Anus T S Rufford New York—p 21
Detailed Studies of a Series of Gallbladder Cases E Andrews, Chicago—p 36
Paravertebral Anesthesia in Obstetrics Experimental and Clinical Basis J G P Cleland Oregon City Ore—p 51
Chemical Composition of Amniotic Fluid Comparative Study of Human Amniotic Fluid and Maternal Blood A Cantrow H Stuckert and R C Davis Philadelphia—p 63
Nonspecific Granuloma of Gastro Intestinal Tract J F Erdmann and C V Burt New York—p 71
Studies on Tumor Metastasis II Distribution of Metastases in Cancer of the Breast S Warren and Eva M Witham Boston—p 81
The Jauu Gastrotomy G T Pack New York—p 86
The Transverse Incision in the Upper Abdomen W Bartlett and W Bartlett, Jr St Louis—p 93
Dysfunctional Uterine Bleeding Results in Treatment with Extracts of the Urine of Pregnant Women G Van S Smith and J Rock Brookline Mass—p 100
Tumors of the Parotid Region Studies of One Hundred and Thirty Five Cases J McFarland Philadelphia—p 104
Surgical Treatment of Rectal Tuberculosis W A Tansler and C K Petter Minneapolis—p 115
Treatment of Fractures of Outer End of Clavicle A H Frynn Brooklyn—p 118

Chemical Composition of Amniotic Fluid.—Cantrow and his associates made chemical studies of amniotic fluid and maternal blood obtained simultaneously from thirty-six women in the seventh to the ninth months of normal pregnancy. The protein content of the maternal serum ranged from 4.07 to 7.5 Gm per hundred cubic centimeters. That of the amniotic fluid varied from 0 to 1.5 Gm averaging 0.53 Gm per hundred cubic centimeters. The nonprotein nitrogen content of the maternal blood ranged from 13.76 to 36 mg, averaging 23.98 mg per cent and being definitely lower than the reported values for normal nonpregnant women. The nonprotein nitrogen concentration of the amniotic fluid varied from 13.6 to 37.5 mg averaging 24.25 mg and being higher than the corresponding maternal blood values in fifteen and lower in twenty instances. The uric acid content of the maternal blood ranged from 1.6 to 4.6 mg averaging 3.05 mg per hundred cubic centimeters. That of the amniotic fluid varied from 2.06 to 8.96 mg, averaging 4.54 mg per hundred cubic centimeters and exceeding the uric acid concentration of the maternal blood in thirty-one cases. The sugar concentration of the blood ranged from 48 to 108 mg averaging 84 mg per hundred cubic centimeters. The sugar content of the amniotic fluid varied from 0 to 59 mg averaging 19 mg per cent. The calcium content of the maternal serum ranged from 8.2 to 12.5 mg averaging 9.82 mg, that of the amniotic fluid varied from 3.26 to 7.84 mg per cent averaging 5.46 mg. The inorganic phosphorus content of the maternal serum ranged from 3.5 to 5.7 mg averaging 4.3 mg per hundred cubic centimeters. The values for amniotic fluid phosphorus varied from 1.2 to 5.4 mg averaging 3.1 mg and

exceeded the phosphorus concentration of the serum in four instances. The authors compare these data with corresponding observations on cerebrospinal fluid and transudates and believe that the amniotic fluid cannot be regarded as a pure dialysate of maternal blood plasma.

Dysfunctional Uterine Bleeding—Smith and Rock treated twenty-four patients who complained of menorrhagia and thirty-six who complained of metrorrhagia with antuitrin S. The optimal dosage in this group was from 20 to 40 cc of antuitrin S given in amounts of from 3 to 10 cc over a period of from three to ten days. Twenty-eight patients were cured, twenty-two were relieved and six were not benefited. The cessation of bleeding accompanied treatment so often and in many cases so rapidly as to leave little doubt of the specificity of the hormone, especially when the variable potency of the preparations was considered. A limited number of laboratory observations have suggested a clue concerning the mechanism of the therapeutic action of this hormone, i. e., the possibility of a direct action on a hypophyseal hormone.

Texas State Journal of Medicine, Fort Worth

29 295 356 (Sept.) 1933

- Intestinal Diverticulosis and Diverticulitis G D Carlson Dallas—p 299
Fluid Levels as an Aid to Diagnosis in Acute Abdominal Conditions T A Pressly San Antonio—p 305
*Pancreatic Extract in Treatment of Angina Pectoris G Milliken Houston—p 307
Radiation Therapy in Inflammatory Processes C A Wilcox Wichita Falls—p 310
*Intestinal Tract as Source of Etiologic Factors in (Essential) Hypertension Preliminary Report J E Johnson Mineral Wells—p 313
Thymic Disease E D Crutchfield San Antonio—p 318
Multiplicity of Factors in Etiology of Asthma and Hay Fever B Swinny San Antonio—p 321
Five Year Report on Use of Surgery and Radium in Treatment of Severe Eukomas of Cornea H L Hilgartner and H L Hilgartner Jr Austin—p 325
Histopathology of Nonspecific Sinusitis W A Wagner New Orleans—p 329
Myasthenia Gravis Report of Fatal Case O E Clements Gainesville—p 337
Treatment of Hemorrhoids with Injection and Surgery H T Hayes Houston—p 340

Pancreatic Extract in Treatment of Angina Pectoris—Milliken calls special attention to the use of an insulin free pancreatic extract in the treatment of angina pectoris. It is so diluted that in biologic assay 0.1 cc neutralizes 1 microgram of epinephrine or the amount of antiepinephrine necessary to counteract 0.001 mg of epinephrine. This is termed one unit. Pancreatic extract has been used in forty cases of angina pectoris. The author has used it in seven additional cases. In the forty-seven cases, the extract was found to be of no benefit in 12.76 per cent, 27.65 per cent showed moderate benefit and marked benefit was obtained in 59.67 per cent of the patients treated by the intramuscular injection of the substance. The amount of extract required to give relief is not constant but gives a fairly clear idea of the severity of the angina: mild cases require from 120 to 740 units to obtain relief, while the more severe cases may require as many as 5,000 units. The best plan of treatment has been daily injections of from 60 to 120 units of the extract for a period of ten days. Then if the symptoms have been relieved the time interval is extended between doses for from one to two days. The extract is used until the patient remains free from all symptoms for a period of six months.

Hypertension and Intestinal Toxemia—Johnson cites his experience with five carefully selected and closely observed cases of early essential hypertension over an average period of two years. He observed that intestinal toxemia is associated with all cases. Treatment that relieves the toxemia reduces the blood pressure. The pressure rises again shortly if the toxemia is allowed to return, and is again lowered with the restoration of normal intestinal elimination. A reasonable level of pressure can be maintained perhaps indefinitely, provided the patient is kept free from toxemia and from emotional stresses. The importance of the establishment of intestinal toxemia as an etiologic factor in hypertension lies not so much in the possibility of the cure of the cases already established as it does in prospects of prophylaxis against the development of this malady in predisposed persons.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

30 163 248 (July Sept.) 1933

- Celiac Disease R F Steen—p 163
Lichen Urticatus or Urticaria Papulosa G W Bray—p 180
*Rare Primary Osseous Dystrophy P Ellman—p 188
Deafness Due to Rickets Case M Yearsley—p 194
*Hemolytic Streptococcal Meningitis with Recovery Case Hilditch Rockett—p 196

Rare Primary Osseous Dystrophy—Ellman presents a case of unusual type of primary bone dystrophy, with secondary manifestations in the joints mainly of the toxic or so called rheumatoid type of arthritis. A careful search of the literature shows reports of an almost identical condition described in two cases by Morquio and in one by Meyer and Brennermann. As in Morquio's cases there was a history of the parents being first cousins. Because the author's patient is an only child, the familial tendency cannot be confirmed. The gross deformity of the body and the points of resemblance of other parts of the skeleton point to the condition being a clinical entity that is distinctive and almost identical with the cases of Morquio and Meyer and Brennermann. The underlying pathogenesis is not easy to explain. The parents of the patient were first cousins and the lower blood calcium, blood phosphorus and blood phosphatase is undoubtedly an important factor in what Morquio described as a serious disturbance of osteogenesis. The question of an endocrinal change (parathyroids?) being the primary factor has to be considered. The essential feature of generalized bony decalcification points to the possibility of a congenital metabolic disturbance. While the mother is convinced that the condition followed measles it is more likely, from the history, that measles aggravated the already existing changes in the skeleton bringing the condition more vividly to her notice.

Hemolytic Streptococcal Meningitis—Rockett reports the case of a boy, aged 2½ years who was admitted to the hospital with whooping cough and bronchopneumonia. The temperature dropped to 99 F and remained at or near this level for the next fortnight. During this period the patient's general condition was poor; he coughed whooped and vomited at fairly frequent intervals and the lungs showed signs of extensive bronchitis. Twenty-two days after admission the temperature commenced to rise reaching 103 F the following day. In the absence of any other clinical manifestations, apart from bronchitis it was assumed that the rise of temperature with accompanying increase of pulse and respiration rates was indicative of a recrudescence of bronchopneumonia. Three days later, rigidity of the neck was first observed. There was no retraction of the head and Kernig's sign was negative. On otologic examination, both tympanic membranes were found to be normal. On lumbar puncture turbid fluid under slightly increased pressure was obtained. Both direct smear and culture gave a negative result. From the fluid obtained on the following day a profuse growth of hemolytic streptococcus in pure culture was grown. Treatment by antiscarlatinal serum intrathecally and intramuscularly was immediately begun. Intravenous administration of serum was found to be impracticable without cutting down on a vein. Recovery was considerably retarded by severe paroxysms of whooping cough during which suffocation frequently appeared imminent.

British Journal of Dermatology and Syphilis, London

15 333 384 (Aug Sept.) 1933

- *Further Observations on Autohemotherapy N Burgess—p 333
Multiple Gangrene of the Skin Report of Three Cases J H T Davies—p 341
Keratosis Punctata at an Unusual Site (Naevus Unius Lateris) J Beatty—p 346

Autohemotherapy—Burgess used autohemotherapy in cases of psoriasis, eczema, varicose dermatitis with sensitization rash, chronic urticaria, toxic erythema, furunculosis, idiopathic generalized pruritus and Besnier's prurigo. Acute psoriasis was cured or greatly improved within two months. One case cleared up within four weeks. The subacute and chronic cases were less satisfactory, half the cases being improved but the rest did not benefit from the treatment. All patients were treated

locally with 2 per cent ammonium hydrophosphate and salicylic acid in zinc paste. Consistently good results were obtained in cases of varicose dermatitis of the leg in which a generalized sensitization eruption had occurred, all the patients treated were known to be cured with the exception of three who ceased to attend. In one case the sensitization eruption, which had been present for several months, disappeared in ten days, only two injections being given. The sensitization rash usually disappears after two or three injections, but in most cases the original patch of varicose dermatitis remains unaltered. Eczema failed to improve in 60 per cent of the cases as a result of autohemotherapy, but the remainder were cured or greatly improved. The sensitization eruption occurring in the course of varicose dermatitis treated by autohemotherapy gave the most satisfactory results. Five cases of chronic urticaria were treated of which two were improved. Three cases of toxic erythema were treated and cured. Three cases of furunculosis cleared up after treatment, but a case of idiopathic pruritus failed to respond. In cases of Besnier's prurigo temporary improvement with a diminution of the irritation takes place, but there is no alteration in the appearance of the eruption. Treatment with intradermal injections of autoserum in a few cases of acute psoriasis nummular eczema and angioneurotic edema was not as beneficial as autohemotherapy. The patients who were relieved by autohemotherapy and autoserotherapy gave positive skin reactions to their proteoses, while after successful treatment the skin reactions were negative. Those not relieved had either given negative reactions before treatment or continued to give positive reactions after treatment. The author suggests that it is possible that the blood in these patients contains antigens and that the injection of blood or serum leads to desensitization.

British Journal of Ophthalmology, London

17 513 576 (Sept.) 1933

- Herpes Zoster Ophthalmicus J H Doggart—p 513
Angioma of Retinae with Pathologic Report Case T A Carr and H B Stillard—p 525
Microscopic Appearances of Corneal Grafts J W T Thomas—p 529
Results of Intranasal Daercocystorhinostomy L M J Henry—p 550
Hand Slit Lamp N B Harman—p 552
New Slit Lamp E G Mackie—p 554

British Journal of Radiology, London

6 449 512 (Aug.) 1933

- Variations in Response of Tumors to Sublethal and Lethal Doses of X Rays S Russ and G M Scott—p 451
Effect of Gamma Rays on Metabolism of Tissues in Culture Barbara E Holmes—p 461
Metastases in Breast Cancer Problem of Prevention F Hernaman Johnson—p 468

Metastases in Breast Cancer—Hernaman-Johnson says that metastases may arise from cells which have escaped operative removal or death by radium or they may be already present in embryo in the spine or elsewhere at the time of operation. It is not possible to kill all malignant cells widely scattered as they may be by any form of radiation but suitably applied roentgen treatment will help to stimulate the body itself to deal with them. The fact that the method of attack is indirect makes it imperative that the response of the body tissues should not be exhausted hence one should not aim at doing everything by a single course of treatment but should give treatment from time to time over a period of years. Agents that act solely by affecting the body as a whole should not be neglected. Of these ultraviolet radiation is of proved value but all measures that provide mental and physical health are of importance and the general effect of roentgen rays themselves must not be left out of account. Radiation therapy, however modified and improved may never be an ideal weapon against metastases. But at least its possibilities in this direction should be fully explored as at the moment it is the only line of treatment that holds out any hope of lessening the death rate from this cause.

East African Medical Journal, Nairobi

10 129 158 (Aug.) 1933

- Growth of Public Health Service in a Tropical Town R R Scott—p 110
Toxic Albuminuria of Pregnancy in a Maasai Case Margaret Hilday—p 149

Edinburgh Medical Journal

40 365 400 (Aug.) 1933

- Clinical Studies in Pathology of Bone D M Greig—p 365
Evolution of Ideas Regarding Disease J D Comrie—p 369
Isolated Fracture of the Lunate Bone G I Boyd—p 385

Glasgow Medical Journal

2 41 72 (Aug.) 1933

- Crossed Renal Dystopia Case A Jacobs—p 41
*Purulent Meningitis with Recovery Case Presenting Certain Resemblances to Meningitic Form of Poliomyelitis J A Cruickshank—p 44

Purulent Meningitis with Recovery—Cruickshank reports a case of meningitis that occurred in a healthy young man eight months after an attack of influenza. The cerebrospinal fluid was frankly purulent containing large numbers of polymorphonuclears but no organisms could be found either by direct examination or on culture. There was no focus of infection in the ear or nasopharynx. After an irregular fever lasting about two weeks the illness ended in complete recovery. The author discusses the diagnosis with particular reference to the possibility of the meningitic form of poliomyelitis and concludes that the case was one of purulent meningitis of unknown origin. All cases of so called benign purulent meningitis and cases of incompletely developed abortive or meningitic poliomyelitis should be observed carefully in the convalescent stages for evidence of paralysis or dementia paralytica and should be studied from the epidemiologic aspect. When there is no definite evidence of the infection having been due to the virus of poliomyelitis, it does not seem justifiable to make any more exact diagnosis than one of purulent meningitis of unknown origin. The objectionable term 'aseptic meningitis' is best avoided.

Indian Medical Gazette, Calcutta

68 425 484 (Aug.) 1933

- *Atebrin in Treatment of Indian Strains of Malaria R N Chopra B M Das Gupta and B Sen—p 425
*Tropical Typhus Serologically Related to Scrub Typhus of Federated Malay States C de C Martin and I A P Anderson—p 432
Role of Eosinophils in Diagnosis of Spasmodic Asthma H W Acton and Dharmendra—p 436
Diabetes in Children J P Bose—p 443
Schematic Representation of Variants of Cholera Vibrio Produced Under Influence of Bacteriophage C L Pasricha A J de Monte and S K Gupta—p 448
Experimental Studies with Spirillum Found in Nasal Cavity of Some Lepers B M Das Gupta and S N Chatterjee—p 453
Carcinoma Oris in Monkey Infected with Trepannia Donovanii R O A Smith—p 455
Vincent's Disease in a Macaca Irus Monkey K V Krishnan—p 455
Filtrable Phase of Tubercle Bacillus M B Soparkar and C S Dhilon—p 456
Constancy of Sugar Chloride Relationship in Diabetic Urines K A Bagchi—p 457
Gavano New Specific for Amebic Dysentery G H Itzgerd—p 458

Treatment of Malaria—From a study of thirty eight cases of malaria treated with atebrin (an amino acid derivative) Chopra and his associates draw the following conclusions. 1 Atebrin is an effective drug in the treatment of Indian strains of malaria. Its destructive action on the asexual forms of benign tertian malignant tertian and quartan types of malaria is about equal and the schizonts disappear from the peripheral circulation after the administration of three tablets of 0.1 Gm for two or three days. 2 The sexual forms or gametocytes are more slowly acted on than the asexual forms. The gametocytes of the benign tertian and quartan types are readily destroyed and degenerative changes can be observed in them shortly after the administration of the drug is started. The gametocytes of the malignant tertian type are not touched at all. 3 The drug is effective in doses of 0.1 Gm three times a day for five days. In the majority of cases such a course is effective but in some cases it may have to be repeated after an interval of a few days. The drug can also be effectively given intravenously in doses of 0.1 Gm dissolved in from 1 to 2 cc of distilled water when the number of parasites in the peripheral blood is large. 4 In chronic types of malaria the drug is effective and produces a rapid reduction in the size of the spleen. 5 It is reported to prevent relapse but the evidence at the authors disposal shows that this is not the

case with Indian strains of malaria. Its prophylactic value is similar to that of the cinchona alkaloids. 6 In blackwater fever and in patients in whom the administration of quinine produces hemoglobinuria, atabrin can be safely given. 7 The blood pressure is lowered in some patients during the administration of the drug but in the majority there is no effect. The pulse rate and respiration are not markedly affected. It has been used for patients suffering from endocarditis and myocarditis without ill effects. 8 The drug is largely excreted in the urine and can be readily detected. The excretion is not regular and goes on for three weeks or longer. There is a distinct tendency toward cumulative action of the drug. 9 It produces certain untoward effects, which are not serious. A profound feeling of general depression occurs in some patients. A slight yellow tinge of the skin and conjunctiva was observed particularly in those patients in whom excretion from the kidney is hindered for some reason. Slight epigastric pain, a feeling of uneasiness in the stomach, headache and loss of appetite and diarrhea sometimes occur when the drug is being administered. These as a rule stop when the drug is withheld. 10 The action of atabrin closely resembles that of the cinchona alkaloids, and the introduction of this drug is a distinct advance in the treatment of malarial fevers in India.

Tropical Typhus Related to Scrub Typhus—Martin and Anderson describe a case of continued fever contracted in Burma, exhibiting symptoms and signs suggestive of tropical typhus. Repeated Widal tests gave no evidence of infection by the enteric group, while the Weil-Felix test with proteus OX19 was persistently negative. The serum of the patient taken on the eighteenth day of the illness strongly agglutinated the Kingsbury strain of proteus, OXK, a strain of proteus which reacts specifically with the serum of cases of scrub typhus occurring in Malaya. Therefore the authors considered their case to be one of tropical typhus belonging to the same serologic variety of the typhus-like fevers as the K group, or scrub typhus. The clinical features of the case, with a history of a painful insect bite, and the later serologic observations strongly suggested to the authors that they were dealing with a variety of tick typhus forming another of the rural group of typhus-like fevers, a group which includes tick typhus of India and scrub typhus of Malaya. So far as they are aware this is the first occasion on which this variety of tropical typhus has been reported and demonstrated serologically. They suggest that the introduction and use of the Kingsbury strain of proteus, in addition to proteus X19 for the serologic diagnosis of typhus-like fevers, will probably show that there exist two groups of these fevers, one of which has heretofore remained undiagnosed by laboratory methods.

Journal of Laryngology and Otology, Edinburgh

48 525 584 (Aug) 1933

Treatment of Chronic Suppurative Otitis T R Rodger—p 525
Acoustic Tumor Clinical and Pathologic Reports Two Cases A A Gray—p 535

Journal of Tropical Medicine and Hygiene, London

36 249 264 (Sept 1) 1933

Further Observations on Micrococcus Mycetis and Micrococcus Metamyceticus A Castellani—p 249
The Slaughter of Animals for Food F G Craston—p 251
Symptomatology of Yaws in Liberia Part III Goundou and Gangosa G W Harley—p 252

Medical Journal of Australia, Sydney

2 197 234 (Aug 12) 1933

Cancer and Tuberculosis VIII Survey of Recent Work on Causation of Cancer T Cherry—p 197
Importance of Early Treatment of Vascular Dementia F H Molesworth—p 217

South African Medical Journal, Cape Town

7 489 524 (Aug 12) 1933

National Health Insurance A W Burton—p 491

7 525 560 (Aug 26) 1933

Allergy Definition and Scope of Allergy in Clinical Medicine D P Marais—p 527
The Nature of Allergy L Mirvish—p 531
Treatment of Allergic Syndromes J D M Claessens—p 532
The Nasopharyngeal Factor in Allergy A Smuts—p 537

Tubercle, London

14 481 528 (Aug) 1933

After Effects of Phrenicectomy H M Davies—p 481
Analysis of Immediate Results of Phrenic Evulsion or Phrenicectomy in Pulmonary Tuberculosis H E Watson—p 489
Id D W F Jones—p 491
Morbid Anatomy and Histology of Asbestosis S R Gloyne—p 493
Some Clinical Types of Tuberculosis L S T Burrell—p 498
Lowenstein's Technic of Cultivating Tubercle Bacillus from Blood Stream and from Other Infected Material A W Smith—p 502
*Studies on Immunity to Tuberculosis H S Willis—p 506

14 529 576 (Sept) 1933

Study of Differential Count and Sedimentation Test in Tuberculosis with Suggestion for an Index Figure Summing up Information Derived from Them C Frimodt Moller and R M Barton—p 529
Two Remarkable Cases of Large Pulmonary Cavities Closed by Surgical Methods B Hudson—p 548
Morbid Anatomy and Histology of Asbestosis S R Gloyne—p 550

Immunity to Tuberculosis—Willis studied, particularly on solid mediums, the effect of unheated rabbit blood on the growth of human and bovine tubercle bacilli. Rabbit's blood was obtained and incorporated into mediums by drawing 4 cc of a 25 per cent solution of sodium citrate made from physiologic solution of sodium chloride (0.85 per cent) into a 25 cc syringe into which the blood was then aspirated directly from the heart to a total mixture of 20 cc. Blood thus obtained was added to warm glycerinated agar medium in the proportion of 1:2 (15 cc of blood and 3 cc of medium) and the mixture allowed to cool in a slant. Several lots of this medium were planted with human (H37) and a like number with bovine (B1 and B44) tubercle bacilli along with equal numbers of tubes containing the same batch of medium to which no blood had been added. Also a few tubes of each were planted with avian tubercle bacilli. The cultures were observed at regular intervals of from five to eight days until growth was complete. This varied from three to six weeks. Both human and bovine tubercle bacilli grow luxuriantly in mediums to which citrated rabbit's blood has been added. The addition of this ingredient to mediums neither unduly stimulates the growth of bovine bacilli which are pathogenic for rabbits, nor inhibits the growth of human bacilli to which rabbits are resistant. These types grow equally well on mediums prepared with rabbit's flesh instead of beef. When added to solid medium, sodium citrate stimulates moderately the growth of tubercle bacilli. Both human and bovine tubercle bacilli are carried over the rabbit's body after subcutaneous inoculation in the groin. Each is recoverable from the lungs and kidneys five days after inoculation.

Japanese Journal of Gastroenterology, Kyoto

5 37 112 (July) 1933

*Influence of Intravenous and Subcutaneous Administration of Glucose on Secretion of Gastric Juice M Matsuyama—p 37
Studies in Gastric Secretion with Especial Reference to the Significance of the Appetite Juice M Matsuyama—p 48
Experimental Studies in Sodium Chloride Metabolism Report I Influences of Injection of Bacteria and Colloid Substances on Sodium Chloride Metabolism H Saito—p 57
Id Report II Effect on Sodium Chloride Metabolism of Changing the Function of the Reticulo-Endothelial System by Blocking H Saito—p 67
Id Report III Relationship Between the Function of the Reticulo-Endothelial System and Retention of Sodium Chloride in the Tissues H Saito—p 72

Influence of Dextrose on Gastric Juice—The studies of Matsuyama bring out that, when dextrose is previously administered intravenously the gastric secretion taking place on the intake of food is inhibited in human beings just as in dogs, but the degree of the inhibitory effect is not marked. When the solution of dextrose is previously injected subcutaneously, the gastric secretion taking place on the intake of food is conspicuously inhibited and sometimes suppressed. This inhibitory effect on the secretion is due not only to the rise in the level of the blood sugar but to the excitement of the centrifugal sensory nerves. Solution of dextrose injected intravenously at the time when the gastric secretion on intake of food was taking place exerts no inhibitory action on the gastric secretion. And, further whatever the concentration of the solution of dextrose and whatever the amount of dextrose, the course of the gastric secretion is not affected.

Paris Médical

2 341 376 (Nov. 4) 1933

- Children's Diseases in 1933 P Lereboullet and F Saint Girons — p 341
 *Fetid Colic Syndrome in Children P Nobecourt —p 357
 Principles of Regulation of Cow's Milk Intended for Children P Lereboullet —p 361
 So Called Bacillus Pfeiffer Meningitis C Cohen —p 368
 Modern Ideas on Pneumococcus Peritonitis in Children J Huber —p 371

Fetid Colic Syndrome in Children—Nobecourt describes the fetid colic syndrome that occurs in infants and children (rarely under 6 years of age) as a manifestation of abnormal putrefactive processes in the large intestine, which are favored by an abundance of insufficiently elaborated nitrogenous residues. A diet too rich in animal proteins and too poor in cereals, vegetables and fruits is usually the primary cause of the syndrome, but individual factors, such as dyspepsia, secretory disturbances of the gastro intestinal tract and a neuro-arthritis disposition, may play an important part. The most characteristic symptom is the fetid odor of the stools. Evacuation of the bowels usually occurs only every other day or every third or fourth day. Careful examination of the feces may disclose small masses of coagulated mucus, but blood is absent. In many patients the constipation gives way from time to time to a diarrhea in which two or three stools may be passed daily, and this condition may last several days. The fetid odor is accentuated during the periods of diarrhea. The aspect of the abdomen is generally normal. Palpation may disclose a sensitivity in the region of the large intestine, the ileocecal colon, the splenic angle of the colon or, more often, in the cecum. Modifications of the consistency and caliber of the colon are observed. Gastric succussion sounds and enlargement of the liver are frequently present. Symptoms of a hyposthenic gastric dyspepsia, often associated with the fetid colic syndrome, may be evidenced. Pallor, often cholemic, is observed. The children are generally thin, sad, apathetic and irritable, are easily fatigued and suffer from headaches. The evolution of the syndrome is essentially chronic, but acute exacerbations with fever may occur. The general symptoms often dominate the clinical picture and careful inquiry is necessary to reveal their cause. Treatment consists first of all in regulation of the diet. This comprises on the one hand the elimination or restriction of milk, meat and egg white with the substitution of buttermilk, yoghurt and kefir, and on the other hand the sole or predominant use of cereals, legumes rich in carbohydrates, and other vegetables and fruits. Medicinal treatment aiming at stimulating the digestive secretions, producing antiseptics of the large intestine, supplementing deficient digestive secretion and combating the constipation the general weakness and so on, should be given according to the individual indications.

Presse Medicale, Paris

41 1649 1664 (Oct 25) 1933

- *Combined Pyretotherapy and Chemotherapy in Primary and Secondary Syphilis C Richet, Jr J Dublineau and F Joly —p 1649

Combined Pyretotherapy and Chemotherapy in Syphilis—Richet and his associates report clinical and experimental facts which seem to prove that pyretotherapy and chemotherapy combined can check a syphilitic infection more rapidly than chemotherapy alone. They obtained the cure of experimental syphilis in rabbits which arsenotherapy alone (in the same doses) could not have produced and which pyretotherapy (of the same intensity) could not have obtained with constancy. In clinical practice the authors employed their treatment in thirty-seven cases of recent syphilis, five cases of primary and thirty-two cases of secondary syphilis. Each injection of antisyphilitic medication (given in the usual doses) was followed on the same day or several days later by the injection of a substance producing hyperthermia usually Dmelcos' vaccine. The average hyperthermia of more than 39 C in all patients totaled twenty-five hours for from eight to eighteen injections. The rapid disappearance of adenopathies and particularly of syphilids was noted. In some of the cases of primary syphilis the serum reactions became negative after five injections of antisyphilitic medication and in the thirty-two cases of secondary syphilis the serum reaction usually became negative after from eight

to sixteen injections. The exact mechanism of this therapy is still obscure but the demonstrated sensitivity of *Spirochaeta pallida* to heat is an important factor. In three patients presenting chancres each of whom received an injection of an arsenic preparation followed two hours later by an injection of Dmelcos *Spirochaeta pallida* had disappeared the next morning while the spirochete could still be demonstrated in a control patient.

Polichnico, Rome

40 1715 1754 (Oct 30) 1933 Practical Section

- *Diathermy in Treatment of Gangrenous Pulmonary Abscess T Lucherini —p 1715
 Calculous Bilateral Hydronephrosis Pyelolithotomy and Nephrolithotomy D Lioy —p 1721

Diathermy in Treatment of Pulmonary Abscess—Lucherini employed the following technic in treating gangrenous abscesses of the lung. Two lead electrodes about 0.5 mm in thickness, 18 cm in width and 25 cm in length are placed on the anterior and the posterior aspects of the side of the thorax corresponding to the seat of the pulmonary lesion, which is thus completely traversed by the diathermic current. The electrodes are fastened with large elastic bands and the patient is either half seated or lies prone. The intensity of the current varies according to the tolerance of the patient, generally from 1 to 15 amperes, and the duration of treatment is ten minutes for the first, twenty for the second and thirty for all succeeding treatments. One treatment is given every day. The author's patients received no supplementary treatment. The results proved satisfactory in all cases. The patients showed general improvement, increase of weight, disappearance of coughing, fever, pain, and hemoptysis, as well as diminution of the expectoration and of its fetid odor. Roentgenologic examination confirmed the improvement. The author maintains that by stimulating the blood and the lymphatic circulation and bringing energy into the tissues in the form of heat this method of treatment favors the resolution of the pathologic process, cleanses the focus of the disease and aids the recuperative powers of the tissues. The method is not advisable in acute forms of gangrenous abscess of the lung tending toward serious hemorrhages. The author believes that, even if the disease is not completely cured by this process, it improves the condition of the patient, reduces the extension of the gangrenous focus, renders the prognosis more favorable, stimulates the action of medical treatment and prepares the way for surgical intervention. The number of diathermic applications should correspond to the course of the disease and its symptomatology.

Semana Medica, Buenos Aires

40 973 1048 (Oct 5) 1933 Partial Index

- Treatment of Cancer of the Tongue R C Nicolini —p 973
 Tonsillectomy in Plaut Vincent's Angina in Children I A Garcia and Y Franchini —p 1000
 Surgical Therapy of Fibroma of Uterus Complicating Puerperium T A Chamorro —p 1001
 *Glycemia in Pulmonary Tuberculosis A Dalto —p 1004
 Syphilitic Chancre of Gums of Extragenital Conjugal Origin Case M I Quiroga and A Sicardi —p 1026

Glycemia in Pulmonary Tuberculosis—Dalto performed the provoked hyperglycemia test in fifty-six patients having various forms of pulmonary tuberculosis without hepatic complications. The determinations were made one half hour, one hour and two hours after the oral administration of a 20 per cent solution of dextrose. The author concludes that in patients with grave febrile forms of pulmonary tuberculosis in evolution as well as in emaciated tuberculous patients there is hyperglycemia. In patients having stationary forms of pulmonary tuberculosis the glycemia is diminished but shows a tendency to become normal again. In patients suffering from subfebrile sclerous forms of chronic evolution there is hypoglycemia and occasionally hyperglycemia. In patients whose tuberculous lesions follow a favorable course, with improvement of their general condition glycemia is diminished during the first determinations of the test and then rises to normal values without exceeding them. The author's results agree with those generally reported in the literature. He considers the variations of both normal glycemia and provoked hyperglycemia if not exactly an absolute mathematical criterion in the direct diag-

nosis and prognosis of pulmonary tuberculosis, at least a coadjutant element of great value in the indirect diagnosis and prognosis of the disease, as they are the manifestation of the profound changes which the carbohydrate metabolism suffers in those patients

Dermatologische Wochenschrift, Leipzig

97 1523 1550 (Oct. 28) 1933

Erosion of Skin Caused by Dichlorethylsulphide (War Gas) A. Matras —p. 1523

Growth Inhibiting and Fungicidal Action of Various Chemicals on Epidermophyton Rubrum Epidermophyton Interdigitale and Trichophyton Pedis A and B Li Hsueh Yi —p. 1526

Antisiphilic Treatment of Lesions Suspected of Being Primary Syphilitic Lesions Without Corroboration of Diagnosis by Demonstration of Spirochetes? A. Musger —p. 1532

Fungicidal Action of Various Chemicals—Li Hsueh Yi calls attention to the high incidence of fungous infections of the feet. He mentions *Epidermophyton rubrum*, *Epidermophyton interdigitale* and *Trichophyton pedis* A and B as the most frequent causes. He investigated the action of various chemicals in experiments *in vitro* and found that Castellani's fuchsin dye, thymol, benzoic acid and salicylic acid have a powerful growth-inhibiting as well as fungicidal action, and thus the experiments corroborate the favorable clinical action of these substances. Alcohol, mercurochrome, saturated carbolfuchsin, sodium thiosulphate, ethoxy-diamino-acridine lactate and hexylresorcinol in weak dilution are practically ineffective, and the author thinks that in view of these experimental results the clinical value of the latter group of preparations must be questioned. Resorcinol in a solution of from 1 to 3 per cent proved growth-inhibiting toward *Trichophyton* and fungicidal against *Epidermophyton interdigitale*. Pure benzene and dioxyanthranol were growth-inhibiting for all the fungi tested except *Epidermophyton interdigitale*, but they were fungicidal only for the latter.

Klinische Wochenschrift, Berlin

12 1633 1672 (Oct. 21) 1933

Bacteriology and Serology of Whooping Cough M. Cundel and W. Schluter —p. 1633

*Cooperation of Cells and of Colloid in Incretory Action of Thyroid W. Grab —p. 1637

Eight Year Old Testicular Cyst with Preserved Incretory Function B. Romeis —p. 1640

*Rapid Diagnosis of Syphilitic Infection by Examination of Tonsillar Tissues E. Hoffmann —p. 1642

Can Read's Formula Be Used as Substitute for Determination of Basal Metabolism? A. Boger and K. Voit —p. 1642

Acute Pulmonary Edema in Mitral Stenosis K. Thums —p. 1644

Treatment of Heart Block and of Adams Stokes Disease with Ephedrine F. Seelher —p. 1648

Tubercle Bacillus in Tuberculosis and in Rheumatism H. Popper —p. 1650

Influence of Cephalin and of Heparin on Antibody Formation K. Pelczar —p. 1654

Storage of Thorium Dioxide Preparation and Iron Metabolism C. Barkan —p. 1658

Role of Prothrombin and Heparin in Proliferation and Differentiation of Tissues Z. Zakrzewski —p. 1658

Results of Discussions of Committee of Experts on Public Hospitals 1932 W. Hoffmann —p. 1659

Function of Cells and of Colloid in Thyroid—On the basis of his studies, Grab states that the colloid of the thyroid stores the hormone of the thyroid. The hormone probably consists of thyroxine and of acid-soluble iodine fractions. The high concentration of hormone substances in the colloid is characteristic for the normal gland prepared for adequate functioning. The presence in the colloid of considerable amounts of acid-soluble iodine compounds and their secretion into the circulation during increased activity of the gland indicates that these fractions are of great physiologic significance for the function of the thyroid. The epithelial cells have an entirely different function from that of the colloid. These cells have to absorb the iodine-containing substances from the blood, transform and concentrate these substances and store them in the colloid until an adequate stimulus severs their adherence to the colloid and the hormone is secreted into the circulation. These functions apply only to the healthy, normally functioning thyroid and not to pathologic cases, for it has been proved that the great masses of colloid in colloid goiter contain only as much active hormone as a gland of normal size but in a much

lower concentration. The quantity of colloid and its susceptibility to stains are no measure of its functional significance. The author thinks that in pathologic cases the examination of the colloids as the product of cellular action presents a type of functional test of the cells that will point the way in the search for the origin of the pathologic mechanism. It is likely that studies on the quantity of colloid, its actual hormone content and its capacity to store hormone will add considerably to the understanding of the problems of goiter.

Rapid Diagnosis of New Syphilitic Infection—Hoffmann takes smears from the tonsils by scraping them with a sharp curet or with a slightly bent spatula. The fine debris that contains epithelium as well as deeper tissues is crushed between the slide and the cover glass. The addition of physiologic solution of sodium chloride can usually be omitted. As a rule, a definite diagnosis should not be made unless the preparation contains only *Spirochaeta pallida*. However, an experienced person can make the diagnosis also if, besides *Spirochaeta pallida*, other strongly differing spirochetes are present. It is frequently possible to obtain pure preparations of *Spirochaeta pallida* by first wiping the tonsils with diluted alcohol and sodium chloride solution and after that, scraping them with a sharp curet. Before placing the cover glass preparation under the microscope it should be sealed with wax. The examination of the specimen should be repeated one half hour and several hours later, for the microorganisms that at first were covered by detritus may appear later in the spaces only filled with fluid. The same applies also to preparations obtained from primary lesions, papules or lymphatic punctates. The author emphasizes that he has used this method successfully for many years not only in symptomless new cases but also in secondary syphilis with indistinct exanthems. The subsequent serologic tests such as the Meinicke reaction, will generally corroborate the diagnosis, but in rare cases of secondary syphilis in which the seroreaction remains negative the demonstration of the spirochete may prove of great value. In cases in which this simple method is successful the puncture of lymph nodes may be dispensed with. In women and children who have no genital lesion the tonsillar method is especially helpful. If the genitalia show a new primary lesion, material should also be obtained from the cervix or urethra.

Medizinische Klinik, Berlin

29 1431 1472 (Oct. 20) 1933

Arterectomy as Method of Sterilization and Results of This Intervention E. Wehner —p. 1431

Type, Genesis and Incidence of Injuries of Eyes in the New Born F. Schenk —p. 1433

Significance of Type Specific Iropeptin Therapy in Nutritional Allergy E. Urbach —p. 1435

*Value of Kauffmann's Water Test as Functional Test of Heart O. Zimmermann —p. 1437

Case of So Called Pseudoglutination C. Riebeling —p. 1440

*Ambulatory Treatment of Contracted Flatfoot with Unpadded Plaster-of-Paris Cast According to Bohler W. Schindler —p. 1442

Pathogenesis of Angina Pectoris Decubitalis A. Ichendorff —p. 1444

Pseudomyoma of Peritoneum Originating in Appendix I. Muresan and F. Ilie —p. 1445

Modification of Streptococcal Infection of White Mice by Gold W. A. Collier —p. 1447

Surgical Treatment of Injuries of Hand and Fingers (with Exception of Bone Fractures) H. Schmorell —p. 1449

Treatment of Varicose Veins and Ulcers with Stocking Impregnated with Zinc Oxide C. Fervers —p. 1450

Kauffmann's Water Test and Cardiac Function—In testing the reliability of Kauffmann's water test, Zimmermann found that in patients with circulatory disturbances during slight cardiac decompensation the diuresis test is positive almost as often as it is negative, while in a number of patients without clinical signs of cardiac decompensation the test gave positive results. Moreover, the omission of the raising of the feet frequently did not alter the positive result. On the other hand, in persons in whom a negative result had been obtained with a raising of the feet, a subsequent test in which the raising was omitted frequently was positive. On the basis of these and other irregularities in the test the author reaches the conclusion that Kauffmann's diuresis test cannot be relied on as a functional test of the circulation.

Ambulatory Treatment of Flatfoot—On the basis of Bohler's theory that injured or inflamed limbs require complete and uninterrupted immobilization but that at the same

time the muscles should have free play, Schundler treated flat-foot of the muscular contraction type, in which freezing of the peroneus would ordinarily be resorted to, by means of Bohler's plaster-of-paris cast, which permits the patient to walk. He emphasizes that the cast should be as light as possible and that in the first few days circulatory disturbances, pain and inhibition of the movement of the toes should be watched for. The cast is left on for about six weeks, and during this time the patient is free from pain and can walk without difficulty. When the cast is removed, the foot is at once freely movable. That the unpadded plaster-of-paris cast is essential for the use of the member will be realized when it is compared with a padded cast. Apart from the much greater weight of the padded cast, the patient is never entirely free from pain while he wears it. Moreover, Bohler and many who have employed his method have always emphasized that with the unpadded bandage that permits the patient to walk there never develops a stiffening. By using the limb while it is fixed in the cast, the apparently paradoxical result is obtained that the muscles are frequently stronger after removal of the cast than they were before, because in using the member in the cast not only the body weight has to be borne but also the weight of the cast. The author employed the treatment with good results in fourteen cases. He admits that the treatment cannot always do away with more radical interventions, but in a large number of cases it gives satisfactory results without impairment of the working capacity. He thinks that even in flatfoot of the osseous contraction type that occurs in older persons a trial should be given to the ambulatory plaster-of-paris cast. This cast is not always satisfactory in infectious arthritis of the foot but in combination with other methods it may eventually prove effective even in this condition.

Munchener medizinische Wochenschrift, Munich

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- Problem of Parenchymatous Keratitis K Wessely—p 1673
Transmission of Acute Anterior Poliomyelitis by Carriers K Kisskalt—p 1676
Disturbances in Olfactory Sense M Nadoleczny—p 1676
Main Causes of Injuries of Recurrent Nerve in Gout Operations and Their Prevention K Schundler—p 1680
Periodic Sterility in Women H Albrecht—p 1682
Why Does Body Posture Change During Pregnancy? G A Wetz—p 1686
Reliability of Friedmann's Rapid Reaction for Diagnosis of Pregnancy F Hein—p 1687
Case of Gangrenous Appendicitis in Piratypoid Breslau H Müller—p 1688
Outspoken Frinkness of Physician or Sympathetic Understanding of the Psyche of Patient A Krecke—p 1689
Hemorrhages from Urogenital System L Kiehlentner—p 1693
Diagnosis and Treatment of Gastric and Duodenal Ulcer H Schlecht—p 1696
How Should the Practitioner Treat Bone Fractures? F Lange—p 1701
Treatment of Carbuncle of Neck M Crasman—p 1704
Diabetes Mellitus Regeneration of Islands of Langerhans A Terbruggen—p 1705
First Aid and Treatment in Poisoning by Gases H Cebule—p 1710
Treatment of Pulmonary Tuberculosis in Pregnant Women W R Claser—p 1712

Change in Body Posture During Pregnancy—Wetz shows that the change in the position of the center of gravity plays a minor part in the postural changes during pregnancy. In most cases pregnancy is characterized by a stretching of the vertebral column. The decrease in the lumbar lordosis runs at an enlargement of the abdominal space and the stretching of the thoracic vertebral column serves the enlargement or the preservation of the thoracic volume. If a shifting in the center of gravity were the dominating factor, an aggravation of the lumbar lordosis and of the thoracic kyphosis would be the result. However the author admits certain exceptions to this rule. The aforementioned postural changes apply only to pregnant women who do not have a pendulous abdomen. If the abdominal walls are relaxed so that the abdomen protrudes far there is neither a great pressure on the lumbar spine nor a considerable elevation of the diaphragm. In these cases and only in these the center of gravity is shifted greatly and must be compensated for by a backward placement of the thoracic vertebral column. Consequently there is not a stretching but an increased kyphosis of the thoracic portion of the spine.

Wiener klinische Wochenschrift, Vienna

46 1217 1248 (Oct 13) 1933

- *Treatment with Ultrashort Waves in Internal Medicine E Schliephake—p 1217
Development of Sella Turcica in Children Under Normal and Pathologic Conditions W Wieser—p 1220
Internal Aspects of Boeck's Miliary Lupoid A Bergel and O Scharff—p 1224
*Investigations on Clinical and Biologic Significance of Argentaffine Cells of Gastro-Intestinal Tract Action of Extract from Intestinal Mucous Membrane on Bartonella Anemia of Rats C Erös and S Kunos—p 1227
Galactose Test in Cirrhosis of Liver E Hermann—p 1230
Pulmonary Hyperemia M Mastbaum and M Winnikow—p 1231
Local Tuberculin Reactions E Nobel—p 1233
Clinical Aspects of Abdominal Disturbances of Circulatory Diseases E Lauda—p 1234
Covered Perforation of Stomach and Penetrating Ulcer of Stomach and Duodenum E Ranzi—p 1238

Ultrashort Wave Therapy—Schliephake points out that since ultrashort wave therapy aims at treating conservatively conditions that generally require surgical interventions, it deserves especial attention from internists. He reviews animal experiments that prove the selective action of certain wavelengths of the ultrashort type on tumor cells and on certain cells of the central nervous system. His practical therapeutic experiences with the ultrashort waves include 300 cases of furuncles, in which a cure was obtained in an average of about four and a half days. Carbuncles and paronychia likewise were influenced favorably. However, of greater importance is the fact that ultrashort wave therapy is effective in pulmonary abscess, in pleural empyema and in osteomyelitis. In empyemas wavelengths of 6 meters were much more effective than those of from 10 to 15 meters. Parodontitis was effectively treated with wavelengths of less than 6 meters, and granulomas were influenced best by a wavelength of 4 meters. Gynecologic disturbances that yielded to ultrashort wave therapy were pelvi-peritonitis and tumors of the adnexa. Angiospastic conditions were influenced, provided the vascular walls had not yet undergone noticeable changes. This was the case in incipient atherosclerotic gangrene and in angina pectoris. Some cases of migraine also were improved.

Argentaffine Cells of Intestinal Mucous Membrane

Eros and Kunos continue Eros's report of studies on the significance of argentaffine cells in the gastric mucous membrane (first report abstracted in THE JOURNAL, November 11, p 1597). They show that extract from the intestinal mucous membrane of animals that have been treated (left to starve) so as to effect an increase in the argentaffine cells has a therapeutic action on bartonella anemia in rats. The extract inhibits the further development of anemia and promotes hematopoiesis. It was surprising that these results were obtained with extremely small quantities. Larger doses were ineffective or even exerted an inhibiting action on the hematopoiesis. The hemograms of several patients having pernicious anemia were likewise favorably influenced by extracts prepared from the intestinal mucous membrane of starving chickens or hogs.

46 1249 1280 (Oct 20) 1933

- Calcium Metabolism Parathyroid Apparatus and Skeletal System E Cold—p 1249
Modification of Blood Glycolysis by Cancer and Its Diagnostic Utilization Cornelia Wetzler Igetti and R Willheim—p 1252
Photobiologic Sensibilization and Desensibilization in Ultraviolet Wave Lengths and Their Relations to Photopathies W Hausmann—p 1257
*Extragenital Metastases in Puerperal Sepsis S Stefancsik—p 1258
Fluctuations of Iodine and Calcium in Blood of Persons with Eczema and Dermatitis G I Uman'sky and A P Stepanow—p 1262
Diseases of Lymph Nodes H Mautner—p 1265
Division of Pulmonary Adhesions According to Jechius A A Frisch—p 1265
Pharmaceutic Preparations Influencing Vascular System A Frohlich—p 1266
In Defense of Preliminary Irradiation in Uterine Cancer A Mayer—p 1270
Reply to Preceding Paper of Prof. Dr. Mayer S Simon—p 1271
When Should Colloidal Coaters Be Operated On? A Finkelberg—p 1272
Erroneous Diagnosis Most Frequent in Cerebral Hemorrhages H Herrmann—p 1273

Extragenital Metastases in Puerperal Sepsis—According to Stefancsik the metastases of puerperal sepsis are of great significance for they indicate a generalization of the infection. He discusses the development of metastases in

various parts of the body. The metastases of the lung and the liver predominated in the cases studied. The author states that in every case in which the diagnosis of puerperal sepsis has been made the patient should be examined daily in order to detect metastases that as yet do not cause complaints. He thinks that, since the complications are frequently fatal care should be given to their prevention, and in this connection he directs attention to the ligation of the veins, a procedure that in recent years has been widely recommended.

Potassium and Calcium in Blood in Dermatitis—Uman-sky and Stepanowa call attention to reports in the literature that indicate changes in the electrolyte content of the blood serum in different dermatologic disturbances. There are indications that between the potassium and the calcium ions in the blood there exists a certain relationship that exerts its influence on the skin. The authors report their studies on the potassium and calcium content of the blood of persons having acute eczema and dermatitis. First they determined the normal averages in healthy persons and then they made tests on three patients presenting acute eczema and on two having dermatitis. In each of these patients the potassium and calcium content of the blood were determined once at the height of the pathologic process, again when the weeping of the skin or the edema diminished, either spontaneously or as the result of treatment, and a third time after the complete disappearance of the skin disorder. It was found that, when the dermatitis or the acute eczema with edema are in the severest stage, there is always an increase in the potassium content of the blood and occasionally a decrease in the calcium content. As soon as the edema disappears, the ratio between the potassium and the calcium content of the blood becomes altered in that the potassium decreases and the calcium increases. Following the disappearance of the dermatitis and the acute eczema the potassium and the calcium return to normal.

Zeitschrift f Geburtshilfe u Gynakologie, Stuttgart

106 285 440 (Oct 13) 1933

Problem of Placement of Arm into Nape of Neck in Pelvic Presentation L. Nürnbergger—p. 285

Aborted Ovarum, Aged 1 Month P. Caffier—p. 290

Lumbago in Women and Bones of Pelvis H. Jacobi—p. 306

*Coccyx as Obstacle to Delivery and Therapy of This Complication K. Habbe—p. 320

*Blood Pigment Metabolism in Gestation Function of Liver During Pregnancy G. Huwer—p. 324

Significance of Vaginal Flora in Gravidity for Course of Puerperium H. Siebke and W. Horstmann—p. 383

Extraperitoneal Ligation of Hypogastric and Ovarian Arteries W. Haupt—p. 398

Two Rare Malformations of Heart H. Schwanen—p. 416

Modification of Ester of Cholesterol by Spinal Anesthesia Ether Chloroform Anesthesia and Evipan K. Fuge—p. 429

The Coccyx as an Obstacle to Delivery—Habbe mentions four cases in which he recognized in time that the coccyx was an obstacle to delivery, but he dispensed with the operative removal and instead chose the nonsurgical removal of the obstacle. He fractured the projecting ankylosed coccyx in the course of the extraction by means of the forceps, and he never observed an injury to the child or a tearing of the soft tissues in the mother. In one instance, in which dislocation of the mobilized coccyx took place, the woman suffered from symptoms afterward, but these yielded to treatment. In all other cases, the coccyx healed so that the deviation disappeared. The author thinks that the obstructing coccyx can be removed, eventually, by introducing the hand into the rectum. He advises surgical removal only for cases in which other measures are unsuccessful.

Function of Liver During Pregnancy—Huwer emphasizes that the normal blood status presents a constantly preserved equilibrium between erythropoiesis on the one hand and the physiologic decomposition of the erythrocytes, hemolysis, on the other. He thinks that the study of the various factors involved in the blood exchange will be an aid in the proper estimation of physiologic and pathologic processes of the blood and that it may be helpful in instituting rational therapeutic measures. Studies of the blood of pregnant women convinced the author that the quantity of blood increases toward the end of pregnancy. While in nonpregnant women the blood amounts to 695 per cent of the body weight, it amounts to 786 per

cent at the end of pregnancy. The hemoglobin content in its relation to the body weight is, however, the same, for the increase in the quantity of blood involves only the plasma. Consequently the reduction in the percentage of hemoglobin and in the erythrocyte count, observed during pregnancy, is the result of the increase in plasma, representing a hydrema and only simulating an anemia. The color index remains the same as in nonpregnant women. The blood regeneration is greatly increased during the last weeks of pregnancy, but this increase corresponds to a greater decomposition of hemoglobin, which becomes evident in the elimination of urobilin and of other urinary pigments. The author emphasizes that it is incorrect to estimate the blood decomposition at the end of pregnancy on the basis of the bilirubin concentration of the blood, because the reduction in the albumin content of the blood of pregnant women creates conditions on the basis of which the concentration of the bilirubin is reduced. Studies of the hepatic function of pregnant women convinced the author that a urobilinuria, which could be considered as indicative of an impairment of the hepatic function, does not exist during pregnancy. Moreover, functional tests of the liver, which are based on the elimination capacity of this organ for dyestuffs, are unsuitable during pregnancy, because the albumin reduction of pregnancy has created entirely different conditions. These tests indicate the quantitative vehicle function of the serum protein bodies but not the elimination capacity of the liver.

Ugeskrift for Læger, Copenhagen

95 1183 1206 (Nov.) 1933

*Trichlorethylene Intoxication in Industry K. Roholm—p. 1183

*Clinical Contribution to Trichlorethylene Intoxication T. Christiansen—p. 1187

*Chronic Septic Polyarthrits in Childhood with Eye Complications Two Cases A. Friedländer—p. 1190

Trichlorethylene Intoxication in Industry—Roholm reports four cases of acute trichlorethylene poisoning in Copenhagen factories in December, 1932. He states that other fatal cases have been reported since Stüber in 1931 collected 284 cases of trichlorethylene intoxication with twenty-five deaths. While resorption through the skin is possible, trichlorethylene enters the body mainly through inhalation of the vapors. Besides its narcotic effect, equaling that of chloroform and carbon tetrachloride, trichlorethylene exerts a specific intoxicating action on certain nerves of the brain, particularly the trigeminal. The chemical has an extensive application in industry as a cleanser for metal parts, a dry cleaning agent and a solvent for fats, tars, rubber and so on and is also used in the treatment of trigeminal neuralgia. The author advises that the use of trichlorethylene be restricted so far as possible. It should be heated in tightly closed containers completely cooled before opening, and should not be used in small, poorly ventilated rooms.

Trichlorethylene Intoxication—Christiansen's patient, a woman previously well, developed during the course of two months symptoms suggesting a disturbance of the upper respiratory passages. An accidental result in roentgen examination of the trachea showed an extensive pathologic process in the lungs resembling a miliary tuberculosis. Inhalation of a poisonous gas was denied, but finally it was found that on the day of onset of the symptoms the patient had worked for half an hour, vigorously cleaning a pair of shoes with trichlorethylene. Recovery occurred after about five months. The author states that this case clinically supplements the anatomic pathologic picture of the lungs in the case of trichlorethylene intoxication described by Koch in 1931 and confirms Koch's assertion that trichlorethylene, in addition to its narcotic effect, has properties directly injurious to the lungs and, under certain circumstances, able to cause a lung involvement dominating the picture.

Chronic Polyarthrits in Childhood with Eye Complications—Friedländer calls attention to the fact that an iridocyclitis not only may occur in chronic septic conditions but may also, as in the first case, appear as the initial symptom of a grave general disturbance. The combination of chronic disease of the joints and iridocyclitis in the writer's cases presented such marked points of similarity to tuberculosis that correct diagnosis was not made until a late stage in the disease.

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RADIATION IN PRIMARY OPERABLE BREAST CANCER

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Until very recently, general acceptance of irradiation in breast cancer has been limited to postoperative therapy and to the palliative care of inoperable, recurrent and metastatic growths. The only contact with the disease in its more favorable stages has been that following operation. It is even questionable whether this has been as altruistic as might seem on the surface. All too frequently the case is referred, following operation, for postoperative irradiation as a gesture and for diplomatic reasons. Unfortunately, the manner in which the postoperative therapy, at times, is given, may justify to some degree this view on the part of the surgeon. In only a limited way has there been a close cooperation between surgery and radiation therapy in the field of breast cancer. While it represents one of the largest groups of cancer, it has not generally received the cooperative effort between surgery and irradiation that has been noted in certain other cancer groups. As far as the operable material has been concerned radiation therapy—when employed at all—has for the most part been started after surgery has been finished.

It would seem that there is now sufficient reliable published information and an accumulation of experience to warrant a reappraisal of the situation. What position does radiation therapy now hold in the treatment of primary operable cancer of the breast? How may it be improved within those limitations? And how may its usefulness be extended? Do the surgical results warrant a complete right of way for operative measures in the technically operable cases? Has radiation therapy enough to offer to justify giving it precedence at any time in this group of cases? Does the accumulated experience with radiation in general warrant taking a bold step into the semidarkness for the benefit of such a desperate disease?

While no such clear-cut definition of controllability by irradiation has been made in breast cancer as with the epidermoid carcinomas, it is my opinion that the accumulated experience is sufficient to warrant advancing the status of irradiation in the breast group. It deserves initial consideration in the entire primary operable group—not in a competitive but in a cooperative way. It has sufficient to offer to warrant delay in operation for thorough preoperative irradiation. There is neither need nor justification except in certain

special cases for operation the morning after the making of a positive clinical diagnosis. Strictly operable tumors in elderly persons may well be a problem for radiation therapy rather than for surgery. The same may be true for the very young. Advanced growths, still considered operable by many surgeons, will probably do better by irradiation than by surgery.

There is a surprising uniformity in the surgical statistics from large clinics on the three and five year results of surgical treatment alone. The cases without axillary node involvement show a five-year curability of from 70 to 75 per cent. Harrington's¹ series was 71.2 per cent and this may be considered a fair average. This seems at first, most reassuring, yet Portmann reports that 95 per cent of all patients coming to operation have axillary nodes involved. The same author reported from the compilation of a large series of statistics that the average length of life in breast cancer, untreated, is thirty-four months, and that the average curability after operation, in the entire operable group, is 38.6 per cent for the three-year and 28.8 per cent for the five-year period. Sampson Handley² states that 70 per cent of all patients coming to operation have intrathoracic involvement. After a most exhaustive study of the records of patients operated on at Johns Hopkins from 1889 to 1931, Dean Lewis³ concluded that, while the results for the first five years are encouraging, nearly all die of cancer ultimately. He distinguishes between "clinical" cancer and cancer in the "pathologic" sense and urges the most extensive operation possible on the ground of avoiding local recurrence and hence prolonging life in comfort for a longer period. He bases the only possibility of preventing local recurrence on this wide removal, especially of skin.

When the evidence is carefully gone over, the fact remains that of all patients coming to operation at least 70 per cent are dead from extension of the disease at the end of five years and that the majority of the remaining 30 per cent die of cancer ultimately.

With the known and proved value of the physical agents in cancer and in the face of such a gloomy picture from surgery alone, it seems evident that radiation therapy should be pressed more aggressively in the so called operable stages of breast cancer rather than limited to the follow-up phase of therapy.

Unfortunately the relative radiosensitivity between different types of breast cancer is not as well understood or apt to be as clearly defined as in epidermoid

1 Harrington S W. Carcinoma of the Breast. Surg. Gynec. & Obst. 56: 438 (Feb. 15 [No. 2A]) 1913.

2 Handley W S. The Place of Radium in the Treatment of Breast Cancer. Practitioner 127: 533 (Oct.) 1930. Treatment of Breast Cancer. Lancet 1: 986 (May 7) 1927. Cancer of the Breast, ed. 2. New York: Paul B. Hoeber, Inc. 1922.

3 Lewis Dean and Reinhold W F Jr. A Study of the Results of Operation for the Cure of Cancer of the Breast. Ann. Surg. 95: 336 (March) 1912.

Read before the Section on Pathology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

carcinomas, especially those of the mouth and cervix uteri. There are differences between these groups and beyond the histology of the tumor itself. The complex breast structure affords a peculiar tumor bed. The amount of fat tissue in both breast and axilla is of little value in supporting an otherwise normal reaction to irradiation. The mode of dissemination of breast cancer, along multiple paths and through both lymphatics and blood vessels, discounts to some degree the value of local histologic appraisals. The variations between tumor grading and relative radiosensitivity are greater in the breast group than in most of the other major cancer groups. In spite of this, continued study, correlating the microscopic changes with the clinical reaction to irradiation, will go far toward pointing out those groups most amenable to radiation therapy. At present the differentiation rests largely on an anatomic basis—the gross extent of the disease.

In an appraisal of radiation in operable breast cancer, it must be considered (a) in conjunction with surgery and (b) as the sole means of treatment.

SURGERY COMBINED WITH RADIATION THERAPY

From the standpoint of conjunction with surgery, irradiation may be employed as a preliminary to operation, as an adjuvant following operation, or as an accessory aid—castration and total body irradiation—and at the time of operation.

1 *Postoperative Irradiation*—It is in this form that irradiation is most generally accepted and employed. Recognition of its value is unanimous among radiologists and is gradually gaining favor with surgeons otherwise disinterested in radiation. A number of recent and excellent reports by radiologists give statistical proof of the value of this form of therapy. Evans and Leucutia⁴ have reported on the five-year results in a series of 173 cases. Surgery and postoperative irradiation gave freedom from clinical evidence of disease of 76.4 per cent for three years and 70.5 per cent for five years in cases without axillary node involvement. Their comparative surgical results were practically identical, and from this they inferred that postoperative irradiation in this group was probably of no value. The inference is perfectly logical, since the disease was strictly local and the therapy followed operation. Further reference, however, will be made to this point under preoperative irradiation. In then cases with axillary node involvement the curability with surgery and postoperative irradiation was decidedly better over a five-year period than in their surgical group alone. Their group of semiradical operative cases followed by irradiation gave better five-year results than radical operation with no irradiation. This is very interesting, but it is to be hoped that it will not be misleading. It is my opinion that surgery resorted to for direct attack on the disease ought to be as extensive as possible. There are indications for local surgery but under other circumstances, to be discussed later.

Portmann's results with postoperative irradiation give a five-year curability of 43 per cent, a gain of more than 10 per cent over his large compilation of results from surgery alone. It is interesting to note that this improvement in results (10 per cent) is approximately the same as attributed to the improvement in surgical results following Halstead's report in 1894 of the

radical operation, which has since been the pattern for practically all extensive breast surgery.

The extensive and complete report by Pfahler⁵ on more than 1,000 cases in various stages gives the best figures for a combined group, 46.6 per cent of freedom from evidence of disease at the end of five years. He concludes that this is a gain of 90 per cent as compared with surgery alone. The uniformity of these results by independent clinicians is impressive and cannot fail to carry conviction.

There is danger, however, in statistics in the present phase of the development of radiation therapy as far as breast work is concerned. Surgery of the breast has been practically standardized since Halstead's notable publication in 1894, and supplemented by his improvement in adding removal of the pectoralis minor muscle a couple of years later. The procedure has been universally followed and the intervening period of nearly forty years has given excellent opportunity for the collection of most valuable statistics. The review of the entire Johns Hopkins work, including the original work of Halstead, by Dean Lewis is one of the most valuable. Never again will there be a period in which such data will become available from a surgical point of view alone. Irradiation is now complicating this phase of the picture. The period in which all the surgical data have been accumulating is longer than the entire lifetime of radiation therapy. Accurate scientific irradiation is a matter of only a few years and technical improvement is more active now than at any time in the past. It must be remembered that five-year results reported today are the result of work that has become technically obsolete in the interim. The persistent queries of the critics of radiation therapy are not sufficient urge to rush toward premature publication where the results are steadily improving under advancing methods. The careful conscientious observations from day to day and from year to year of the most experienced radiologists are infinitely more valuable. If the opinions of such men are not respected neither will their statistics be respected. Surgical statistics are different. They are backed by time, uniformity of technical procedure and a large volume of material from many sources. As it is, comparable statistics will be difficult to find when the time is ripe for comparison. Too little attention has been given to grouping on the basis of the anatomic extent of the disease. Subdivision of the cases on a gross clinical basis after the plans of Schmitz⁶ or Steinthal is essential if statistical data are to be of real value ultimately.

The practical need among radiologists today, as far as actual postoperative irradiation is concerned, is not a question of the advisability of it, that is accepted. It is on the uniformity of technical procedure, the time to begin it, the intensity and quality of the irradiation and the areas to be covered. I believe that maximum efficiency, within the limitation of postoperative irradiation demands beginning treatment as soon as initial healing has taken place. The shortest wavelengths have proved so far to be the most effective in cancer therapy and there is no logical reason why the breast should be an exception. The superficial character of the local field and the possibility of serious intrathoracic damage are not logical contraindications. The accessibility of

⁴ Evans, W. A., and Leucutia, Traian. Deep Roentgen Ray Therapy of Mammary Cancer. *Am. J. Roentgenol.* 24: 773 (Dec.) 1930.

⁵ Pfahler, G. E. Results in Radiation Therapy in 1,022 Private Cases of Cancer of Breast. *Am. J. Roentgenol.* 27: 497 (April) 1939.
⁶ Schmitz, Henry. Five Year End Results in Carcinoma of the Breast. *Radiology* 13: 392 (Nov.) 1929.

the local field should be rather a stimulus to greater filter and higher voltages than an excuse for using a less efficient type of irradiation. Finzi⁷ has stated it admirably by suggesting that postoperative irradiation should be quite as aggressive as would be the case were a recurrence actually present. The suggestion of Luff⁸ that radium is preferable for postoperative therapy is undoubtedly due to the fact that the intensity of his radium therapy was much greater than his treatment with x-rays.

The same might well apply to Sampson Handley's preference for radium needles postoperatively, since he admits that he uses very low voltage roentgen therapy. After a radical operation the various and widespread areas that Handley most fears are more accessible to external therapy and better adapted to roentgen irradiation than to radium. Much has been said about intrathoracic damage, and it does occur in certain individuals, whether or not there is a variable sensitivity is questionable. However, many of the reported instances of such damage, if followed for a time, would prove to be extension of the disease. In dealing with a lethal disease, too much caution is more dangerous than an aggressive policy. The skepticism and uncertainty of many German radiologists on the subject of postoperative irradiation is undoubtedly due to inadequate dosage following an overindulgence in massive single doses during the early days of high voltage roentgen therapy.

No blanket rule can govern the areas of greatest intensity in the postoperative cycle. This should be dependent on the observations made by the surgeon at the time of operation and on the location of the primary tumor in the breast. The entire area to be irradiated, however, should be very wide. Dean Lewis has stated that the possibility of reducing local recurrence is dependent alone on the widest possible excision of skin. In my opinion and experience, wide and intensive roentgen irradiation will carry this needed insurance far beyond the borders of the most radical surgical sacrifice of skin, and very effectively. A very pertinent observation has been made by Harrington. He is not in favor of postoperative irradiation as a routine but advises it in cases of high malignancy. This is valuable in that it draws particular attention to the urgent need of extra help in such cases. It one may draw even a partial parallel with certain other tumors in the body, rated as highly malignant on a tumor-grading basis, it might even suggest the probability of accomplishing relatively more in this type, as far as the local and regional areas of possible involvement are concerned. The real danger, however, is from distant involvement, and it at once raises the question of the advisability of preoperative irradiation as an additional safeguard.

As to the time in which postoperative irradiation should be completed, individual operators have many and varied plans. It is the principle rather than minor details that is important. If one may draw on the experience of treating certain growths by irradiation alone, it would seem most logical to consummate the major portion of treatment within a period of from six weeks to three months at most. Sporadic and prolonged irradiation of low intensity is not in keeping with the most favorable general experience in radiation therapy.

2 Preoperative Irradiation—I strongly believe that preoperative irradiation with x-rays of maximum intensity and quality offers more than any other phase of radiation therapy in primary operable breast cancer at the present stage of development of the use of irradiation in this disease. It has encountered much opposition. The majority of radiologists favor it but rarely have an opportunity to practice it. Just why some radiation therapists are opposed is difficult to understand. It is easier to understand why the surgeon opposes it. He is usually unfamiliar with irradiation on the one hand and is bound by the teachings of his preceptors on the other. From a study of the surgical statistics it is obvious that surgery alone has not enough to offer to warrant brushing aside a valuable aid for the sake of operating immediately. The only legitimate excuse for immediate operation is in the case of questionable clinical diagnosis in which frozen sections are necessary as a guide to the extent of operation. One requires only the experience of dealing with various phases of breast cancer by irradiation over a period of years to see the fallacy of Crile's⁹ statement that, in the fortnight necessary for such treatment, cells not completely destroyed would be growing and extending. Total destruction of all cells is not expected, it such were the case operation would be contraindicated. Many cells are completely destroyed. The chief effect, however, is inhibition growth restraint, regressive and degenerative cellular influences on tumor bed as well as tumor cell. The most carefully done operation entails a substantial degree of trauma as a result of which tumor emboli are apt to be dislodged and carried outside the field of operation. A certain number of the 25 per cent of five-year fatalities following operation in the class I cases are undoubtedly due to dissemination at a distance at the time of operation. Postoperative irradiation does not get at these. They are outside the field of postoperative irradiation. Preoperative irradiation of adequate intensity is capable of reducing this type of dissemination. When axillary nodes are involved, it becomes even more valuable in this respect. One needs only to follow a series of these cases to appreciate the advantage of preliminary irradiation. Moran¹⁰ has suggested that one of the theoretical justifications of preoperative irradiation rests on the classic experiments of Murphy of the Rockefeller Institute with irradiated tumor implants and implant beds. The skin will tolerate a minimum of 2400 roentgens over a fortnight, with 200 kilovolts, a filter of 1 mm of copper and 60 cm distance, without serious interference with the surgical procedure. Preferably the operation should be deferred from six to eight weeks, until full effect of the treatment is manifest and most of the inflammatory effect has subsided. On account of the fibrosis, the axillary dissection is slightly more difficult, but healing is not impaired if rigid asepsis is maintained. In some instances, immediate operation following irradiation is called for. The patient's convenience or temperament may influence this. At that stage the operative field is more hyperemic but healing will not be impaired if proper surgical technique is observed, although it is slightly delayed in rate.

Preoperative irradiation means roentgen irradiation. This type of treatment is not amenable to small surface

⁷ Finzi, A. S. X-Rays and Radium in the Treatment of Carcinoma of the Breast. *Brit. M. J.* 2 (Oct. 22) 1927.

⁸ Luff, A. P. The Incidence of the Cancer in the Breast and Its Result After Treatment. *Brit. M. J.* 1 (Mar. 4) 1921.

⁹ Crile, G. W. Malignant Tumor of the Breast with Special Reference to Management and Final Result. *J. Am. Soc. Control of Cancer* 14 March 1932.

¹⁰ Moran, H. M. The Modern Treatment of Mammary Cancer as at the Tenth Cancer Conference, Cambridge, March 2, 1931.

applications of radium, and radium by implantation is distinctly contraindicated. It is quite a different problem than treatment by radiation alone. The unfavorable comment abroad, especially in Germany, is due to small dosage and to zone irradiation that is too limited. In my experience, tangential irradiation is not practical. It is only in the occasional case that the method can be applied with any degree of satisfaction. Preoperative irradiation has been followed at Radiumhemmet for the past several years and Westermarck¹¹ reporting a small series, finds 40 per cent of all cases classes 1, 2 and 3, free from evidence of disease at the end of five years. The figure is substantially better than similar groups of cases treated by surgery and preoperative radiation only (29.3 per cent). In my own material I have been impressed by the absence of skeletal metastases in the cases that have received preliminary irradiation of maximum intensity consistent with primary surgical healing. It may be a coincidence, a long period of observation alone will be conclusive.

All patients treated preoperatively should, following operation, receive postoperative treatment to the point of maximum skin tolerance. The only possible exceptions to this rule are the class 1 Stenthal cases. The point of concentration of this postsurgical irradiation should be dependent chiefly on the anatomic conditions found at operation.

Reports are occasionally made of inoperable breast cancer rendered operable by irradiation. In my judgment, breast cancer once inoperable is always non-surgical as far as the direct treatment of the disease obtains. The more spectacular the regression, usually the more malignant, and hence the more dangerous from a surgical approach. It is at times very tempting to reconsider in favor of operation after a pronounced regression of a tumor primarily judged to be inoperable. The obvious benefit from the irradiation, however, had best be accepted gratefully and added to by the same agent. Indications for operation in such cases are usually not aimed at direct cure of the disease but for other reasons, and are usually local rather than radical procedures. The patient with a very large fat breast may well carry on more comfortably after a local mastectomy, or an area of impending secondary ulceration may to advantage be avoided by the same means.

3 Accessory Irradiation—From time to time the question has been raised of possible added benefit through castration to the patient with breast cancer. Since it is so readily accomplished by irradiation of the ovaries, it is employed by some radiologists as a routine procedure when indicated. From a detailed study of the entire problem, Taylor¹² concluded that the ovarian hormone was a factor of influence. There seems to be no convincing evidence, however, of practical benefit through incorporating ovarian irradiation with preoperative and postoperative irradiation. In a small series of carefully observed cases at Radiumhemmet Ahlborn¹³ was unable to find evidence that would support the theory in a practical manner.

4 Irradiation at Time of Operation—In certain instances, radium by implantation, preferably radon in gold seeds, may be used to advantage, depending on

the anatomic observations. Reference is made to the posterior portion of the axilla and to the upper intercostal spaces adjacent to the sternum, to which Sampson Handley has so frequently referred.

Before any extensive program of irradiation or surgery in operable breast cancer is assumed, a meticulously careful radiodiagnostic check up should be made of the chest and skeleton. It is a safeguard against grief and embarrassment in a few cases. The chief value lies in an early and permanent record for subsequent comparisons which symptoms may call for.

RADIATION AS THE SOLE MEANS OF TREATMENT

Experience is gradually accumulating on this vital and fascinating phase of mammary cancer therapy. Opinion will differ sharply as to whether the advising of such a procedure freely, in operable breast cancer, at the present time represents courage or foolhardiness. The conscience of the seasoned radiologist or cancer surgeon must be his guide. There may be a very nice distinction at this stage of the development of work between the responsibility one may assume under circumstances of strong personal pressure and the routine of professional work. At least there is a wealth of experience with all types of radiation and in all phases of the advanced disease as a background. There are a good many technically operable cases in which successful treatment over a period of years has been carried on. For one reason or another—age, general constitutional conditions or abnormal aversion to surgery—the radical operation has been withheld and irradiation substituted. On this basis alone, a substantial amount of material will be accumulated within a few years. To date, much of such material is of value only to those actually participating in the care of the individual case. Few biopsies have been obtained.

My first primary operable breast cancer treated by irradiation only, and now well over fourteen years ago, fails to be of value or conclusive to other than the three experienced cancer clinicians who concurred in the original clinical diagnosis, for just this reason. A woman, aged 49, had a tumor in the upper outer quadrant of the breast which was steadily progressing in size up to 2.5 to 3.5 cm. diameter, and over a known period of three months. There was a questionable node palpable low in the axilla. However, the case is best rated as Stenthal, class 1. For esthetic reasons—the patient was a concert singer—she was strongly opposed to surgery and knowing something of radiation pressed for treatment by the physical agents. She finally offered to assume her own future risk if I would but agree to this course. I treated her with the 1919 type of low voltage roentgen radiation and followed it by implantation of unfiltered radon into the tumor and the under surface of the free border of the pectoralis major muscle. The tumor regressed rapidly at first and then more slowly. After three years there was a dense residual mass in the breast and telangiectasis of the overlying skin, such as was common with that quality of roentgen radiation. There has been no noticeable change since.

Only a biopsy is necessary to make even one such case of that duration a matter of valuable record. Various authors, Moran and Wintz particularly, have pointed out that a biopsy is safe if deferred until a fortnight after irradiation has been initiated. By careful handling of tissues and through a small incision placed as obscurely as possible, information may safely be obtained. The value as a future guide in therapy

¹¹ Westermarck, N. Result of the Combined Surgical and Radiologic Treatment of Cancer Mammæ at Radiumhemmet 1921-1923. *Acta radiol.* 11: 1, 1930.

¹² Taylor, H. C. Jr. The Etiology of Neoplasms of the Breast. *Arch. Surg.* 21: 412 (Sept.), 597 (Oct.), 1930.

¹³ Ahlborn, Hugo. Castration by Roentgen Rays as an Auxiliary Treatment in the Radiotherapy of Cancer Mammæ at Radiumhemmet. *Acta radiol.* 11: 614, 1930.

adequately compensates the patient for the slight inconvenience, and it is invaluable to the future record. The theoretical objections to a biopsy are far outweighed by the practical information obtained. A tissue section represents the central point of the data-complex on which relative radiosensitivity is based and on this in turn better radiation therapy is dependent. A biopsy by needle puncture under negative pressure is unsuitable for breast diagnosis except as a last resort.

Any attempt at this time to define the types of operable breast cancer which might justifiably be turned to irradiation entirely resolves itself into an expression of personal preference by the individual author. Certainly there should be little question about those suffering from a grave constitutional disease as well as the elderly and the very young. Elderly patients are prone to carry on for many years without treatment. In very young subjects, surgical results are so discouraging that any benefit from irradiation might well be considered a gain. Furthermore, the esthetic side in these patients lends strong support to the conservative method. In my opinion, cases with a long history of recognized tumor prior to seeking treatment should be considered poor surgical risks even though the local conditions place them in the operable class. Irradiation instead might well be considered acceptable. This is equally true of cases of the advanced Steinthal class 2 group—those with extensive palpable node involvement.

One cannot help but admire the bold position taken by Geoffrey Keynes¹⁴ and some of his associates in London. Since the London Cancer Conference of 1928, a number of English radiologists have become ultra-radium minded. It is questionable whether or not good judgment from a physical standpoint has kept pace with their bold stand on radium for breast cancer. At any rate, they seemingly stress the value of radium without giving quite as serious consideration to roentgen irradiation. It is a matter of individual opinion as to whether or not their recommendation of radium as the sole treatment for most operable breast cancers is premature. Keynes introduces radium needles, and for several days exposure, on two occasions on each patient, each introduction being made under general anesthesia. Handley disagrees with the claimed uniformity of the distribution of radiant energy by his technic. Fitzwilliams¹⁵ agrees with the Keynes technic and is seemingly more radical than the latter in his assignment of material to this method of treatment. Cade¹⁶ endorses it but places added stress on surface applications of prolonged duration. The obvious factor of trauma incident to two introductions of many large radium needles and each set must in turn be removed, is not in keeping with the generally accepted view of trauma in a tumor-bearing area. Mr. Souttar¹⁷ has obviated this in large measure in his cases by using permanent gold-filtered radon implants. The two anesthetics give the impression of a major surgical procedure. In my own experience, external irradiation with x-rays in intensity going far beyond that previously outlined for preoperative therapy, in multiple divided doses and of the shortest available

wavelength will afford complete local control of many breast tumors. A few cases extend now to six and seven years. In some instances the intensity requires implantation following the external irradiation, and for this radon in 0.3 mm wall-thickness gold seeds is used. Radium for external irradiation in quantities sufficient to parallel the present-day roentgen radiation, is neither economic nor practical.

Even though responsibility for the breast cancer in certain instances is placed on irradiation, a subsequent need for surgery occurs at times. In the very large pendulous fat breast, granting "sterilization" of the growth by irradiation, a simple mastectomy may render the patient much more comfortable. I cannot agree with Finzi that removal should be done as a routine after the tumor is "cured" by irradiation. There may well be justification for this position, however, in the scirrhus type of tumor, on account of its radio-resistance and danger of subsequent reactivity. Secondary necrosis rarely occurs, but when it does, or preferably when it is threatened, local mastectomy is indicated for comfort and for the peace of mind of the patient. It is impossible to eliminate all surgery from any one group of cancers of the breast. Finally, while irradiation alone seems amply justified, in fact preferable, in certain groups of primary operable breast cancer, it also seems decidedly premature to regard it as the method of choice in the majority of cases. This is especially true in view of the marked improvement in results through combining preoperative and postoperative irradiation with the radical operation.

In attempting to make an appraisal of the probable value of irradiation in a given case, many factors must be considered. The histologic character of the growth is important and with added experience will become much more so. The size and location of the primary tumor in the breast, its known duration, presence or absence of axillary nodes, its location and extent are all important in selecting and directing the local irradiation. The age of the patient and the rate of growth are of value in governing the intensity of treatment. The general physical condition of the patient and the presence or absence of secondary anemia have substantial bearing on the probable manner in which irradiation will be tolerated and on the reaction to it.

Whatever agent, method or combination of x-rays and radium, with or without surgery, is decided on, no fixed routine plan is desirable. Adherence to fixed principles of therapy rather than to fixed technical details, is the important factor. The factors of influence just previously mentioned must be correlated with what is expected to be accomplished by the irradiation.

THE RELATIVE VALUE OF X-RAYS AND RADIUM

In early breast cancer there seems little room for doubt that roentgen radiation occupies the major position. Most of the treatment is by external application and over wide areas, for this, x-rays are technically best adapted and most economic. Radium occupies a limited but valuable place, and always for implantation. Occasionally a primary tumor assigned wholly to irradiation requires implantation, and at operation radium by implantation may frequently be used to advantage in the axilla or the upper intercostal spaces adjacent to the sternum. For these purposes radon in gold seeds affords a wide range of flexibility in application and is much less damaging from the standpoint of

¹⁴ Keynes, Geoffrey. The Treatment of Primary Carcinoma of the Breast with Radium. Acta radiol. 10: 393, 1929. Treatment of Primary Carcinoma of the Breast with Radium. Practitioner 125: 462 (Oct.) 1930. Radium Treatment of Carcinoma of the Breast. Lancet 1: 439 (March) 1930.

¹⁵ Fitzwilliams, D. C. I. The Modern Treatment of Carcinoma of the Breast. Practitioner 127: 483 (Oct.) 1930.

¹⁶ Cade, Stanford. Cancer of the Breast. Practitioner 125: 469 (Oct.) 1930.

¹⁷ Souttar, H. S. Treatment of Carcinoma of the Breast by Radium Implantation. Brit. M. J. 1: 513 (May 13) 1931.

trauma Radium or radon implantation should always follow rather than precede the roentgen irradiation. Whatever the combination, and with few exceptions, the intensity of irradiation should be the maximum consistent with the tolerance of normal tissues within the zone of irradiation, and the quality always of the shortest wavelength available from up-to-date equipment. There is a limited time interval within which both the tumor and the tumor bed react most favorably to any type of irradiation, and improvement in results demands that advantage be taken of this. Meticulous attention to detail is quite as essential to success in radiation therapy as in surgery. As Moran has so aptly stated, 'the careless radio-therapist, like the rough-handed surgeon, may cause grave mischief.'

SUMMARY

1 Heretofore, irradiation has been limited almost entirely to postoperative treatment. Reference is made to primary operable breast cancer exclusively.

2 Postoperative irradiation has improved the five-year curability results.

3 The experience to date warrants advancing the status of radiation therapy in this group of cancer.

4 Preoperative irradiation is probably of greater relative value than postoperative.

5 In all cases of radical mastectomy, preoperative and postoperative irradiation should be employed.

6 While the ovarian hormone evidently exerts an influence on the development of some breast cancers, there is no substantial evidence to warrant castration by irradiation as a therapeutic aid.

7 As the sole means of treatment, irradiation is justifiable and undoubtedly preferable in certain cases.

8 To consider irradiation alone the method of choice in all cases of this group is premature.

9 Cases treated by radiation alone require biopsy not only for guidance in therapy but also to complete the record.

10 Biopsy is safe if carefully done after preliminary irradiation.

11 Of various methods of irradiation, preference has been given to x-rays for external therapy over wide areas and to gold seeds of radon for implantation.

12 X-rays occupy by far the major position in the radiation therapy of this group.

13 The same degree of attention should be given to technical detail in radiation therapy as in surgery.

350 Park Avenue

ABSTRACT OF DISCUSSION

DR FRED O'BRIEN, Boston. The report on irradiation of breast cancer which appeared in 1930 under the auspices of the American College of Surgeons, practically put an end to radiation therapy of the breast in my particular hospital for about two years because it was carelessly read and carelessly interpreted. Although Greenough stated that he was reporting statistics based on procedures of the decade 1910 to 1920 and that the data on irradiation were insufficient to form a basis on which to draw conclusions, I agree with Dr Quick that the Halsted operation should be the standard operation but it is far from being accepted by surgeons in general. There has been criticism of radiation therapy in the past because of the variety of methods employed, yet roentgen therapy has been in flux from the very nature of the thing, while the operation of Halstead has been known since 1894. There appeared a review in THE JOURNAL of operative procedures on the breast as practiced throughout the United States. It was found that only about 50 per cent of the surgeons employed the complete

operation. It was most injudicious to be dogmatic about post operative irradiation under those circumstances. I think that better results may be expected from clinics in which the surgical and the roentgen therapy methods are uniform. I think that Dr Quick is correct when he says that it does not make any difference whether the patient is operated on the next day after the tumor mass has been found or two weeks from that time. These cases should be handled through a tumor clinic, so that patients will not get into the hospital before they have had their preoperative irradiation. Dr Quick spoke about the time for postoperative treatment and said something about waiting for healing. My own feeling is very definite that irradiation does not retard healing, in fact, I know that it helps in the healing of many wounds. I have always thought that preoperative irradiation was most logical. If it is good afterward it ought to be equally good, if not better, before. I have seen no skin damage in recent years. Lord Moynihan stated in New York a few years ago that surgery had had its chance and had accomplished nothing and that he believed that now irradiation should be given its chance.

DR U V PORTMAN, Cleveland. Dr Quick has asked me to speak about the percentage of axillary involvement in my report of several years ago, which was based on statistics given by pathologists. I think the figure of 95 per cent of axillary involvement is probably a little too high and that it should be about 85 per cent. In other words, about 15 per cent of cases do not present axillary node involvement. This paper is not given with the idea of eliminating the surgical treatment of cancer of the breast but with the idea of proper treatment according to indications. With Dr Quick, I think that as radiologists we should insist on some classification based on clinical rather than microscopic observations. It is my experience that I can tell more about what the subsequent course will be from the clinical story than I can from what the pathologist tells me. When a scirrhous type of growth is present an entirely different clinical problem is presented than when more rapidly growing tumors are concerned. A tumor of long duration cannot be affected much by radiation and operation is preferable. Perhaps Dr Quick will agree with me that the less clinically malignant the less radiosensitive the tumor will be. I certainly agree with Dr Quick that a primarily inoperable case never becomes operable. This applies not only to breast carcinoma but also to malignant neoplasms in any other place in the body. As Dr Quick has prophesied, more cases of cancer of the breast will be turned over to the radiologist. But it is unfortunate that only about 15 per cent of all these patients have no axillary nodes involved and these are ideal for irradiation. As the skin becomes infiltrated by the neoplasm, the surgeon has a difficult task and I suppose that no surgeon will say that he can remove all the axillary involvement in 50 per cent of his cases. It has been my experience that a great many of them do not excise widely enough. It is in the operable cases that irradiation should be most valuable. In a great many the tumor itself can easily be eliminated by interstitial irradiation, and external irradiation will often destroy the skin extension.

DR DOUGLAS QUICK, New York. I want to stress the need among radiologists to group these cases on some practical basis. While various means have been suggested I lean toward the clinical and anatomic basis, because it is simple and permits of drawing rather straight lines. The group 1 cases are those strictly primary breast tumors without palpable nodes. The second class includes those with palpable, technically operable, nodes and the third class, those with fixation of the primary tumor or with distant involvement. A good deal of knowledge on the relative radiosensitivity of these tumors is being acquired but it is not comparable with existing knowledge of radiosensitivity in certain other groups. Consequently it cannot be leaned as heavily on as a guide at the present time but I think that a point will be reached where, from a histologic standpoint, one can pick out more definitely the types best suited to irradiation. I should like to stress the encroachment if one chooses to call it that of the radiologist on the breast cancer field. It represents a cooperative and not a competitive effort in any sense.

GASTRIC ACIDITY IN THYROID
DYSFUNCTIONS ALLEN WILKINSON, JR., MD
BOSTON

It has been recognized for some time that hyperthyroidism causes changes in gastric acidity and that in some cases there is an absence of hydrochloric acid. Hardt¹ in 1916 called attention to the fact that thyroid feeding caused lowered gastric acidity in normal dogs. Barker² in 1918 mentioned hypochlorhydria, and King³ in 1919 noted that achlorhydria and achylia occur in hyperthyroidism. Lockwood⁴ in 1925 and Moll and Scott⁵ in 1927 reported a high incidence of achlorhydria in exophthalmic goiter. Following this line of thought, Truesdell⁶ in 1926 showed that a lowering of acidity could be produced regularly by feeding thyroid to dogs, and in some achlorhydria was produced.

On the other hand, Crile⁷ and his co-workers have held that the same mechanism that produced hyperthyroidism could in some cases produce peptic ulcer. He has also stated that denervation of the suprarenals and a hemithyroidectomy frequently relieves recurrent peptic ulcer. If this theory is true, hyperthyroidism should raise, not lower, the gastric acidity. Lerman and Means⁸ have shown however, that there is a definite tendency to lowered gastric acidity in hyperthyroidism and that the proportion of achlorhydria is increased beyond the normal.

This study was undertaken to show the relationship between hyperthyroidism and gastric acidity and to determine to what extent the acid returned to its normal level after relief of the toxicity. Also, we wanted to see what effect a postoperative lowering of the basal metabolic rate below the normal level would have on gastric acid.

This study comprises the results of gastric analyses in 100 cases of hyperthyroidism, taken before operation. At the Lahey Clinic it is the practice to have all patients return three months after partial thyroidectomy for a check-up metabolism. Of the original 100 cases we were able to get only about one half back for check-up gastric studies. This was due partly to the reluctance of some patients to have a second test, partly to inability to return, and partly to the fact that three months has not elapsed since some of the original tests were made. It was felt, however, that for purposes of averages, a comparable number of postoperative check-ups would give as much information. Consequently, determinations were made in 114 cases. In addition,

there was a much smaller group of patients with spontaneous myxedema who had had no operative history. Determinations were made in as many of these as possible, but cases of true myxedema are rare. Hurxthal⁹ has shown that, in order to be classified as true spontaneous myxedema, the patient should first present the clinical signs and symptoms of the disease, secondly he should have a low metabolism and lastly he should have an elevated blood cholesterol. Many patients have a low metabolism but they do not fulfil the other two criteria and are not benefited by thyroid medication.

The method of gastric analysis used in this series was the same in all cases. A test meal of 50 cc of 7 per cent alcohol was given on a fasting stomach after all the residual stomach contents had first been aspirated. Five minutes later a subcutaneous injection of histamine acid phosphate was given. The dose used was 0.1 mg of histamine for each 10 Kg of body weight. Fractional samples of the gastric contents were taken at thirty, sixty and ninety minutes. While it is usually customary to aspirate at fifteen-minute intervals and for a two-hour period, a short preliminary series indicated that, for all practical purposes this test was just as accurate and much simpler. In no case in this series was acid obtained at the one and one-half hour extraction when it had been absent in all the previous extractions. The averages in this series were obtained

TABLE 1—Hyperthyroidism Averages Before Operation

Metabolism	Ca es	Basal Metabolic Rate	Free Acid	Total Acid	Variations in Acidity	
					Free Acid	Total Acid
Over +35 with acid	40	+52	34.7	46.8	3-80	6-92
Under +35 with acid	24	+20	42.7	51.7	6-6	12-52
Over +35 without acid	0	+52	0	14.8	0	4-30
Under +35 without acid	6	+25	0	15.0	0	10-20
Averages all cases	100	+42.6	24.0	36.9		

from the maximum free and total acid values obtained during the course of each test.

There is considerable divergence of opinion as to what constitutes the normal level of acidity. For my purposes in this paper the normal level is irrelevant, as the figures quoted are on a comparative basis rather than a fixed standard. Vanzant and others¹⁰ have reported a large series with the standard Ewald meal and a single one-hour extraction. Histamine was not used as a routine in their series. They give the average figure for free acid at 40 and the total acid at 57. Lerman, Pierce and Brogan,¹¹ using an alcohol test meal and histamine, report the normal free hydrochloric acid as 40.4 and the total acid as 50.1.

In table 1 are the averages of 100 cases of toxic goiter, of these, 91 cases were primary hyperthyroidism and 9 were adenomatous goiter with secondary hyperthyroidism. Thirty-six patients had achlorhydria. In the group with free acid are included about ten patients who had a very low acid (under 10). As the table indicates a large proportion of those who had achlorhydria fell in the group who had a basal metabolic rate higher than +35.

From the Department of Gastro-Enterology of the Lahey Clinic. The New England Deaconess Hospital Pharmacy furnished the histamine used in this study.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

¹ Hardt L. J. The Secretion of Gastric Juice in Cases of Gastric and Duodenal Ulcers. *Am J Physiol* 40: 314-331 (April) 1916.

² Barker L. F. Endocrine Functions and the Digestive Apparatus. *Tr Am Gastro-Enterol A* 11: 220-245 1918.

³ King J. H. Gastro-Intestinal Disturbances in Metabolic Diseases and in Diseases of the Ductless Glands. *M Clin North America* 2: 1455 (May) 1919.

⁴ Lockwood H. C. The Digestive Tract and Endocrine Function. *J A M A* 85: 1032-1036 (Oct 3) 1922.

⁵ Moll H. and Scott R. A. M. Gastric Secretion in Graves Disease. *Lancet* 1: 68 (Jan 5) 1927.

⁶ Truesdell C. The Effect of Feeding Thyroid Extract on Gastric Secretion. *Am J Physiol* 76: 202 (March) 1926.

⁷ Crile C. W. Interdependence of Adrenal, Thyroid Gland and Sympathetic Nervous Systems with Clinical Application. *Illinois M J* 75: 101 (Feb) 1930.

⁸ Lerman J. and Means J. H. Recurrent Hyperthyroidism. Neurocirculatory Asthenia and Peptic Ulcer. *Treatment J A M A* 97: 1616-1618 (Nov 24) 1931.

⁹ Hurxthal L. M. Blood Cholesterol in Thyroid Disease. II. Effect of Treatment. *Arch Int Med* 20: 19 (July) 1933. Also R. J. Hunt H. M. and Hurxthal L. M. Blood Cholesterol Values in Hyperthyroidism and Hypothyroidism. *Their Significance*. *New England J Med* 207: 1273 (Dec 25) 1930.

¹⁰ Vanzant F. R., Alvarez W. C., Fusterman J. B., Dunn H. J. and Perk on Joseph. The Normal Range of Gastric Acidity from Youth to Old Age. *Arch Int Med* 49: 34-39 (March) 1932.

¹¹ Lerman J., Pierce F. D. and Brogan A. J. Acidity in Neurocirculatory Asthenia. *Clin Investigation* 11: 1-16 (Jan) 1932.

Table 2 shows the averages three months or more after operation in 114 cases. In this group twelve, or 10.5 per cent, showed no acid, while 102 or 89.5 per cent, showed free acid. The level of acidity has risen in the whole group as well as in the cases in which there was free acid. The average free acid was 46, as compared with 24 in the group before operation. The highest level of free acidity before operation was 427 in the group with a basal metabolic rate of less than +35, whereas in this postoperative group with free acid the average is 51.2.

Table 3 shows the results after operation in twenty-five of the original thirty-six patients who had no acid before operation. These check-up tests were all made about three months after partial thyroidectomy. In this group only three still showed achlorhydria, while twenty-two had regained their acid.

In table 4 are those cases presenting low metabolic rates. There were only five cases of spontaneous myxedema. One of these patients had been taking thyroid for two years, and it is interesting that she had achlorhydria. Of the other four who had never had thyroid, the minimum free acid was 83 and the maximum was 98. One of these patients was later found to have a duodenal ulcer. In the postoperative hypothyroid group, none of whom had the clinical signs of myxedema, the average acidity is also very high. I realize that this series is too small to justify any general conclusions, but it shows an interesting trend.

TABLE 2—Hyperthyroidism Averages After Operation

	Cases	Free Acid	Total Acid	Variations in Acidity	
				Free Acid	Total Acid
With acid	102	51.2	63.5	5-93	23-110
Without acid	12	0	13.9	0	10-22
All cases	114	46.0	58.1		

ACHLORHYDRIA

Our figures agree quite accurately with those of Lerman and Means⁸ with respect to lowering of acidity in toxic goiter. Their series of fifty cases shows 38 per cent of achlorhydria as compared with the figure of 13 per cent according to the observations made by Lerman, Pierce and Brogan¹¹ in a series of 200 normal persons. The latter figure of 13 per cent is much higher than that quoted by Bockus, Bank and Willard,¹² which was 5.7 per cent, but these last investigators used a bread and water test meal with histamine instead of an alcohol test meal. We are in agreement with Lerman and Means who state that the achlorhydria cannot be accounted for on the basis of a general lowering of acidity. The average level of acidity is about one-half the normal while the incidence of achlorhydria is increased at least four times.

While it is true that the majority of the cases of achlorhydria fall in the high metabolism group above +35, this does not, in itself, seem sufficient to account for the figures obtained, as in the same group there were forty cases that showed an average free acidity of 34.7. In searching for a better explanation, we investigated the duration of symptoms of toxicity and found that, whereas the group with free acid showed an average duration of 9.2 months and 68 per cent of this group an average duration of only 3.8 months the

achlorhydric group showed an average duration of 166 months, and only two cases in this group had had symptoms less than six months. It seems, therefore, that the development of achlorhydria depends on the duration rather than on the degree of toxicity.

Of more interest than the actual development of the achlorhydria is the fact that these patients recover their acid so promptly. Three months after relief of the toxicity, 89.5 per cent have recovered their normal gastric acid, and this recovery takes place as well in the anacid group as in the group with free acid. The rise of acid must take place fairly promptly, and appar-

TABLE 3—Results After Operation for Hyperthyroidism Twenty-Five Cases with Achlorhydria Before Operation

Original Metabolism	Cases	Free Acid Present	Free Acid Absent
Over +35	20	18	2
Under +35	5	4	1
Totals	25	22	3

* Average free acid of this group was 44

ently it returns to the normal level and even passes this level. We have no figures to show whether it later falls again.

There have been theories as to whether the depression of gastric acid was a result of actual damage to the gastric mucosa or the result of some constitutional cause. Our observations do not indicate any damage to the gastric mucosa and point to a depression of glandular function. It is well recognized that most of the symptoms of hyperthyroidism are those of extreme overstimulation of the sympathetic system. It is also recognized that, when the sympathetic nervous system is stimulated, the autonomic system is correspondingly depressed. Might not this change in gastric acidity be an expression of the same mechanism that produces the warm skin, the perspiration, the tremor and general activation? Moll and Flint¹³ have touched on this and point out that both in man and in animals, epinephrine in sufficient doses over a considerable period of time will markedly depress gastric secretion and gastric acidity. They also point out that nicotine, which

TABLE 4—Low Metabolic Rates Averages

	Cases	Basal Metabolic Rate	Free Acid	Total Acid	Before Operation	
					Free	Total
True myxedema	5	-24	67.5	81		
Postoperative hypothyroidism	4	-23	81.9	94	22	37

depresses sympathetic nerve endings, produces hyperchlorhydria.

MYXEDEMA

The evidence presented in the literature concerning gastric acidity in hypothyroidism is conflicting. Katz,¹⁴ Levy¹⁵ and Hutton¹⁶ concur in stating that low thyroid function produces hyperchlorhydria. On the other

12 Bockus H L, Bank J and Willard J H. Achlorhydria with Review of 210 Cases in Patients with Gastrointestinal Complaints. *Am J M Sc* 184: 185-201 (Aug.) 1932

13 Moll H and Flint E R. The Depressive Influence of the Sympathetic Nerves on Gastric Acidity. *Brit J Surg* 16: 238-307 (Oct.) 1928

14 Katz J. Deficient Thyroid Secretion as an Etiologic Factor in Gastric and Duodenal Ulcers and in Hyperacid Conditions. *M Rec* 97: 916 (May 29) 1920

15 Levy M D. Endocrine Influence on Gastric Secretion with Special Reference to Hypothyroidism. *New Orleans M & S J* 81: 487-493 (Jan.) 1929

16 Hutton J H. Effects of Hypothyroidism. *Illinois M J* 42: 337 (Nov.) 1922

J. Lockwood⁴ found achlorhydria in 60 per cent of cases of myxedema. Lerman and Means⁸ found cases of achlorhydria in seventeen cases of hypothyroidism. Our series is too small to be of much light but such evidence as we have points toward a definitely increased acidity in these cases. In those patients who conformed to the criteria for myxedema, free acid was 67.5 and the total acid 81. In the operative low metabolism group the acidity was higher. One of these patients had achlorhydria before operation.

SUMMARY

Of 100 cases of hyperthyroidism, 36 per cent had achlorhydria, and the average acid of all cases reduced to slightly more than half the normal.

The observation is made that the incidence of achlorhydria in hyperthyroidism rises in proportion to duration of the toxicity rather than the degree of toxicity.

After thyroidectomy, only 10.5 per cent show achlorhydria. The average free acid is raised to about normal value for the entire series.

A theory is offered that the depression of gastric acidity is a phenomenon of extreme sympathetic overstimulation.

Hypothyroidism in our series at least, produces definite tendency to hyperacidity.

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ABSTRACT OF DISCUSSION

DR. RALPH C. BROWN, Chicago. The point of chief interest in Dr. Wilkinson's study is the evidence showing a return of normal physiologic activity in the gastric secretory glands after incidence of hyperthyroidism following thyroidectomy. This evidence supplies what would seem to be convincing proof of the influence of thyrotoxicosis in suppressing gastric secretion. The fact that all but three of the twenty-five rechecked cases which had been achlorhydric under histamine prior to thyroidectomy regained an average free hydrochloric acid of 44 after recovery from thyrotoxicosis is of evident importance. It emphasizes the need for caution in assuming that a gastric secretory mechanism which fails to respond to histamine is likely to be permanently disabled. The presence or absence of fermentations is a much more reliable basis for a prognosis regarding possible future secretory activity. A review of twenty cases of hyperthyroidism and ten cases of myxedema treated at the Presbyterian Hospital in which gastric secretion studies were made a standard Ewald meal without histamine and used yielded figures somewhat at variance with those reported. In nineteen cases of moderately severe and severe hyperthyroidism with basal metabolic rates ranging from plus 36 to plus 82 I found only three cases of achlorhydria, 16 per cent, a figure only 3 per cent higher than the incidence of achlorhydria in otherwise normal individuals. There were five cases in the subacid group (free hydrochloric acid 20 to 40) nine cases presenting normal acid values (free hydrochloric acid 41 to 40) and two cases of hyperchlorhydria (free hydrochloric acid 41 plus). The average basal metabolic rate of this group of nineteen cases was plus 48. The average duration of symptoms of thyrotoxicosis was fourteen months. The less severe group of thirteen cases with rates ranging from plus 26 to plus 35 only one case of achlorhydria was found and six of these cases presenting a normal acidity and six definite hyperacidity. Combining these figures, one has thirty cases of hyperthyroidism in which only four, or 13 per cent, presented achlorhydria. The average metabolic rate for the entire group was plus 41. The average acidity was 32 units of free hydrochloric acid and the average duration of symptoms was 16.8 months. It may be worth noting that in a larger series thirty-nine cases of mild but (according to my point of view) definite cases of hyperthyroidism showing rates ranging from plus 16 to plus 25 I found four achlor-

hydrias with only five subnormals, nineteen cases, or 50 per cent of the group, showed normal gastric secretion, and eleven cases, hyperchlorhydria. The average duration of symptoms was twenty months. Regarding hydrochloric acid values in myxedema. In ten cases in which the basal metabolic rates ranged from minus 22 to minus 47, and an average of minus 32.6, two were anacid, four were subacid, three gave normal hydrochloric acid values and only one showed a hyperacidity. Again, the number of cases is small, but the observations certainly do not suggest a tendency to hyperchlorhydria in myxedema. Lerman and Means found nine cases of achlorhydria in seventeen cases of myxedema. I should like to ask Dr. Wilkinson whether evidence of any marked lowering of pepsin and rennin secretion was observed in these cases during the achlorhydric phase, also whether any observations were made indicating any greater incidence of gastro-intestinal symptoms, especially diarrhea, in the achlorhydric group of cases than in the cases of acid secretion.

DR. S. ALLEN WILKINSON, JR., Boston. I am indebted to Dr. Brown for his discussion. I do not know how to explain the divergence in figures he has quoted as compared with mine. It is true that in my first twenty cases I failed to find any unusual incidence of achlorhydria. I have no idea why this happened. With regard to changes in gastric ferment, I did tests for gastric rennin in ten cases of this series who showed achlorhydria. Rennin was present in all of the ten cases, and there were none which I could call achylia gastrica.

METABOLIC ACTIONS OF DINITROPHENOL

WITH THE USE OF BALANCED AND
UNBALANCED DIETS

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AND

M. L. TAINTER, M.D.

SAN FRANCISCO

Dinitrophenol (1-2-4) has been shown to increase promptly the metabolic rate in man and laboratory animals to almost any desired level. This action is peripheral, in the tissues, and independent of nervous and glandular functions. Small doses cause a slight increase in oxygen consumption, larger doses cause heat production that may surpass the ability of the animal to dissipate it, so that death occurs from heat rigor.¹ We have suggested that, in proper dosage, dinitrophenol would be a potent therapeutic agent in obesity and in conditions in which a heightened metabolism might be desired. In a consideration of such possible uses the question arose of the source of the fuel for the increased metabolism. That is, dinitrophenol might promote the burning of carbohydrate, fat or protein, or all these fuels equally readily. A selective action on some one fuel appeared unlikely. An attempt was made, therefore to study this question for human metabolism, experimental diets applicable to clinical conditions being used. The results are reported in this paper. Briefly, the results show that during medication with dinitrophenol the human body can maintain nor-

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¹ Cutting, W. C. and Tainter, M. L. *Proc. Soc. Exper. Biol. & Med.* 29: 1268 (June) 1932. Tainter, M. L., Boyce, J. H. and DeFede, F. *Arch. internat. de pharmacodyn. et de therap.* 17: 235 (May 15) 1933. Tainter, M. L. and Cutting, W. C. *J. Pharmacol. & Exper. Therap.* 18: 410 (Aug.) 1933. 19: 187 (Oct.) 1933. Hall, V. F., Field, J., Sahyun, M., Cutting, W. C. and Tainter, M. L. *Am. J. Physiol.* 106: 432 (Nov.) 1933.
² Cutting, W. C., McIntire, H. G. and Tainter, M. L. *Actions and Uses of Dinitrophenol*. *J. A. M. A.* 101: 191 (July 15) 1933. Tainter, M. L., Stockton, A. B. and Cutting, W. C. *Use of Dinitrophenol in Obesity and Related Condition*. *J. A. M. A.* 101: 1472 (Nov. 4) 1933.

mal nitrogen and acid-base balances while reacting with the usual increase in metabolism, regardless of the type of food consumed and without undesirable symptoms

METHODS

Eight experiments were made on four subjects with four different diets, each diet being taken by two different individuals. In each experiment a subject was placed on a given diet for two weeks or longer, and his body weight, basal metabolism, nitrogen balance and urinary organic acids were determined at regular intervals. The first week served as a control period without medication. Immediately following, during the second week, occurred the experimental period with dinitrophenol. The diets in all cases contained 40 calories per kilogram of body weight, a value considered to be adequate for subjects leading a sedentary life and possessing a normal metabolic rate. The diets were all carefully prepared and controlled in the special diet

van Slyke.¹ The values are expressed as cubic centimeters of tenth normal hydrochloric acid, required for the neutralization of the urine in twenty-four hours. It was assumed that, if the acid-base balance was disturbed or if acetone bodies were excreted, the organic acid figure would be increased. The dinitrophenol was administered in capsules as a single daily dose by mouth and before breakfast.

REGULAR DIET

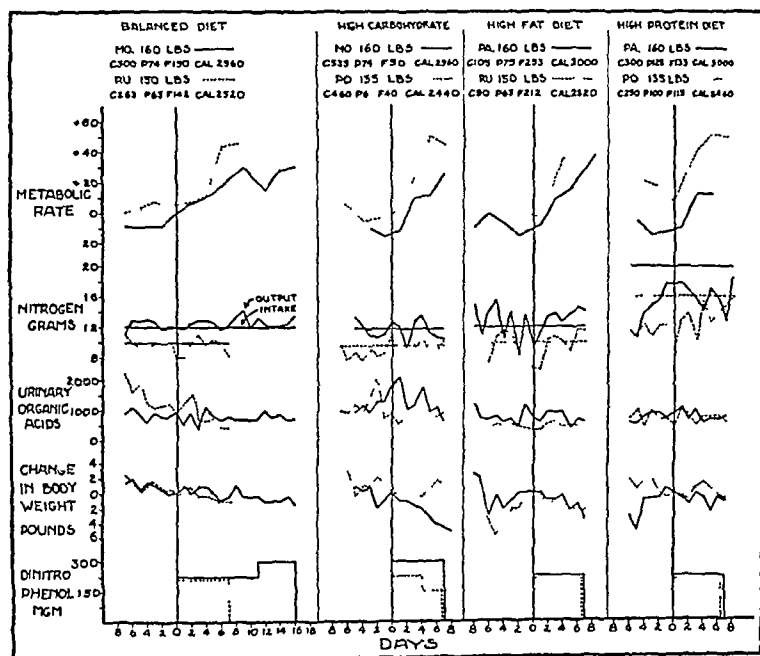
In the first experiment, the subjects were placed on diets containing 1 Gm of protein per kilogram of body weight with the carbohydrate and fat apportioned about equally as to caloric value. This constituted an essentially normal balanced diet. For subject M O, who weighed 74 Kg, the diet contained 2,960 calories and was made up of 308 Gm of carbohydrate, 74 Gm of protein and 150 Gm of fat. The diet for subject R U, who weighed 63 Kg, contained 2,520 calories and was made up of 263 Gm of carbohydrate, 63 Gm of protein and 142 Gm of fat. After a week of control observations, the first subject was given 225 mg of dinitrophenol daily for eleven days, followed by 300 mg daily for five more days. The second subject was given 225 mg daily for seven days. The results obtained are presented in the accompanying chart.

The metabolism in M O rose from an average control of -10 per cent to +30 per cent, or a rise of 40 per cent, by the ninth day of medication with dinitrophenol and remained at this level for the next seven days. In R U the metabolism rose from a control of +5 per cent to +45 per cent, or a rise of 40 per cent, by the sixth day of medication with dinitrophenol and remained at this level for the next two days.

In M O, the daily nitrogen intake was 118 Gm and the output varied from 11 to 14 Gm, with an average of approximately 128 Gm throughout both the control and the experimental period. The daily nitrogen intake for R U was 101 Gm, and the output varied from 8 to 11 Gm with an average of 10 Gm throughout both periods. Therefore the dinitrophenol produced no significant changes in nitrogen balance. The organic acids in the urine were constant at

about 800 cc throughout for M O and fell from an average of 1,500 to 750 cc in R U during the action of dinitrophenol. Therefore there was no increase in acid bodies in the urine following administration of the drug.

M O lost 2 pounds (0.9 Kg) during the control period and about 1 pound (0.45 Kg) during the dinitrophenol period. R U lost weight similarly. With so short a period of medication with dinitrophenol as one week, the weight changes are not striking. A loss of weight might be expected unless the caloric intake was adequate to provide for the increased metabolism. This would not have been the case if the control diets had been just adequate for maintenance at normal metabolic levels, as planned. However, since the water intake and the activity of the subject were not controlled, it is possible that considerable changes in the daily weights might occur from these factors. The



Effects of the administration of dinitrophenol on human subjects on balanced and unbalanced diets: composition of the diets for each subject; metabolic rate; total daily nitrogen intake and output; total daily urinary organic acids; changes in body weight; and dosage of dinitrophenol.

laboratory of the Stanford hospitals. Fluids were not limited. Each subject was weighed daily at the same hour. Nitrogen intake was calculated from protein intake, 6.25 Gm of protein being used as the equivalent of 1 Gm of nitrogen.

The metabolism was determined under basal conditions early in the morning, three times a week. No food or fluids were taken for at least twelve hours before the metabolic test, and there was a rest in bed of half an hour immediately preceding it. Twenty-four hour specimens of urine were collected daily and analyzed for urinary nitrogen by the macro-Kjeldahl method. To the value for urinary nitrogen output there was added an arbitrary value of 1.3 Gm as an average value for daily nitrogen in the feces.³ The values for nitrogen output throughout this paper are the sum of these two quantities. The organic acids in the urine were estimated by the titration method of

3 Peters, J. P. and van Slyke, D. D. Quantitative Clinical Chemistry, Baltimore: Williams & Wilkins, 1920, p. 270.

4 Van Slyke, D. D. and Palmer, W. W. J. Biol. Chem. 41: 567 (April) 1920.

subjects continued their normal activity during the medication with dinitrophenol, and the only symptoms noted were a feeling of warmth and a tendency to perspire freely

It may be concluded from the results of experiments on two normal subjects on a normal balanced diet that a 40 per cent increase in metabolism caused by dinitrophenol did not significantly modify the nitrogen or acid-base balance or cause unpleasant symptoms

HIGH CARBOHYDRATE DIET

In the second experiment, the carbohydrate of the diet was increased to the limit of palatability while the basal protein need of 1 Gm per kilogram and the total caloric intake were left unchanged. This resulted in a reduction of the dietary fat to a minimum. For M O, who weighed 74 Kg, this diet contained 2,960 calories and was made up of 533 Gm of carbohydrate, 74 Gm of protein and 50 Gm of fat. For P O, who weighed 61 Kg, the diet contained 2,440 calories and was made up of 460 Gm of carbohydrate, 61 Gm of protein and 40 Gm of fat. After a week of control observations, M O was given 300 mg of dinitrophenol daily for seven days and P O 225 mg daily for seven days. The results obtained are presented in the chart.

The metabolism of M O rose from a control value of -15 per cent to +10 per cent on the third day, and to +25 per cent, or a total of 40 per cent, on the seventh day of medication with the drug. In P O the rise was from a control value of -5 per cent to +50 per cent on the fifth day, and +45 per cent on the seventh day, or a maximum increase of 55 per cent. The daily nitrogen intake for M O was 11.8 Gm, the output varied from 9.5 to 13.5 Gm, an average of 12 Gm for the two weeks. The daily intake for P O was 9.7 Gm, the output varied from 6.5 to 10.5 Gm, averaging 8.8 Gm during both control and test weeks. Thus there was no significant change in the nitrogen balance of the control and test periods. In both subjects the urinary organic acids varied between 500 and 2,000 cc a day with no significant difference between the control and the test periods. This showed that the formation of acid bodies did not increase during the administration of the drug. M O lost 1 pound (0.45 Kg) during the control period and 5 pounds (2.3 Kg) during the medication with dinitrophenol. P O had an average weight of 1 pound less during the medication period than during the control period. The results in M O were particularly interesting, since they showed a significant weight loss without any commensurate increase in nitrogen output. This presumably indicated that the weight loss was not due to tissue destruction but to combustion of the fat or carbohydrate of the body. Subjectively, the patients felt warm and perspired easily during the medication period, but otherwise they felt quite normal.

On the whole this experiment demonstrated that even when a minimal amount of carbohydrate or minimal fat was present in the diet the usual increase in metabolism could be produced without disturbing the metabolic functions studied or causing undesirable symptoms.

HIGH FAT DIET

In this, or the third experiment, the dietary fats were increased to the limit of tolerance and the carbohydrate correspondingly reduced in order to keep the caloric intake constant and the protein at 1 Gm per kilogram of body weight. For P A, who weighed 75 Kg, the total calories were 3,000, the carbohydrate

intake was 105 Gm, the protein 75 Gm and the fat 253 Gm. The diet of R U, who weighed 63 Kg, contained 2,520 calories and was made up of 90 Gm of carbohydrate, 63 Gm of protein and 212 Gm of fat. After a week of control observations, both subjects were given 225 mg of dinitrophenol daily for seven days. The results are presented in the chart.

The metabolism of P A rose from a control value of -15 per cent to +15 per cent on the fifth day, and to +35 per cent, or an increase of 50 per cent, on the eighth day after medication was started. In R U, metabolism rose from a control value of 0 per cent to values of +40 per cent on the sixth day and of +30 per cent on the eighth day. The nitrogen intake for P A was 12 Gm daily and the output varied from 8.5 to 15.5 Gm during the control period, and from 10 to 14.5 Gm during the medication period. The average of the values for nitrogen output during the control period was 12 Gm and during the medication period 13 Gm. The differences were too small to be of significance in view of the daily variations present. R U showed more definitely that the nitrogen balance was maintained. Here the intake level was 10.1 Gm and the output varied from 6.5 to 11.5 Gm a day, averaging 10 Gm during both the control and the medication period. The urinary organic acids showed an average of 750 cc a day during both weeks for P A, and 500 cc during both weeks for R U, again without evidence of increased acid-body production. The weights of both subjects varied considerably during the control period, but both lost 3 pounds (1.4 Kg) during the medication with dinitrophenol. The subjects were free from pronounced symptoms, even when their basal metabolism was maximally elevated, as in all previous experiments. There was only a moderate feeling of warmth and some increased fatigability on exertion.

Thus, dinitrophenol was effective in increasing the metabolism, without disturbing the basic metabolic processes studied, although the subjects ate a diet containing an abnormally large amount of fat and a minimal amount of carbohydrate.

HIGH PROTEIN DIET

In the fourth experiment, the caloric value of the diets was maintained at 40 calories per kilogram, but the protein was increased to 1.7 Gm per kilogram of body weight. Carbohydrate and fat were apportioned as in a balanced diet. The diet for P A, who weighed 75 Kg, contained 3,000 calories, 300 Gm of carbohydrate, 125 Gm of protein, and 133 Gm of fat. The diet for P O, who weighed 61 Kg, contained 2,440 calories, 250 Gm of carbohydrate, 100 Gm of protein and 115 Gm of fat. After a week of control observations, both subjects were given 225 mg of dinitrophenol daily for seven days. The results are indicated in the chart.

The metabolism of P A rose from a control value of -15 per cent to +12 per cent, or a rise of 27 per cent, on the third day of medication and remained at that level. The metabolism of P O rose from +10 per cent to +50 per cent, or an increase of 40 per cent, by the fifth day of medication and remained at that level during the two remaining days of that period. The nitrogen intake for P A was 20 Gm a day, but the output never reached this level. During the control period it rose to nearly 18 Gm a day but averaged only 16.5 Gm during the medication period. Likewise the output of P O did not approach the intake level.

of 16 Gm a day until the end of the experiment, rising constantly to the end. It appears that on a high protein diet the nitrogen balance may remain positive, at least during the first week of medication with dinitrophenol. The urinary organic acids were remarkably constant throughout. In both subjects there was little variance from a value of 750 cc a day during the control and medication periods, again showing no tendency to acidosis. Although there was some variation in body weight, the two subjects did not lose more than a pound each during the medication with dinitrophenol. The symptoms were the same as those of the other diets discussed.

Thus, when protein formed an unusually large part of the diet, the increased metabolism of dinitrophenol did not disturb the basic metabolic processes of the body and caused no unpleasant symptoms.

COMMENT

Elevations in basal metabolism caused by dinitrophenol of between 27 and 50 per cent and persisting for periods of from seven to sixteen days were studied in subjects on controlled diets. The diets were all adequate as to caloric content on the basis of a normal metabolic rate, containing 40 calories per kilogram of body weight, but were abnormal in that they contained a maximal tolerated amount of carbohydrate, fat or protein. A normally balanced diet was also used for comparison. Such diets represented the extremes likely to be encountered in the dietaries of patients receiving dinitrophenol.

Dinitrophenol, used in doses of therapeutic range, caused increases in metabolism of the usual magnitude irrespective of the type of diet. The nitrogen excretion was never greater than the intake, even when the subjects lost as much as 5 pounds in body weight during one week. From this it seemed probable that there was no actual tissue breakdown during these short periods of heightened metabolism, but that the loss of weight was due to the utilization of stored carbohydrate or fat. This does not mean, of course, that tissue breakdown would not occur if the drug should be given over longer periods, but probably when materials other than protein are available these are utilized first. Thus the assumption might be made that, as long as the protein intake is adequate, any reduction in body weight is not primarily at the expense of the tissue proteins. The failure to demonstrate any change in the amounts of acid bodies in the urine indicated that the fat burned was consumed completely and did not tend to cause an acidosis.

These results indicate that dinitrophenol may be administered to patients on special dietary regimens over short periods without interfering with the usual metabolic effects of the drug. Therefore dinitrophenol would seem especially useful in obesity, in which, through burning of the stored fats, a reduction in body weight might be obtained. This reduction would be accompanied by a minimal destruction of body tissue since there was no demonstrable increase in the nitrogen output. Also because of the absence of unpleasant subjective symptoms, dinitrophenol might be valuable for increasing the depressed metabolism of various disease states. Thus, the palpitation and anxiety that often follow the administration of thyroid in sensitive patients might be avoided. This does not mean, however, that dinitrophenol can entirely replace thyroid, for there may be actions of this gland necessary or useful to the body in addition to its power of increas-

ing metabolism.⁵ In a later paper, we expect to discuss a number of actions of thyroid not possessed by dinitrophenol.

It may be added here that no demonstrable side actions have been observed in the human subjects reported in this paper under these adverse dietary conditions. However, among a large group of patients under observation in the Stanford clinics and from reports of physicians who have tried dinitrophenol, there would seem to be an incidence of something like 5 or 6 per cent of dermatitis. Such a reaction occurs with many other drugs and promptly disappears on withdrawal of the drug. As for other side actions, such as those resulting from renal or hepatic functional injuries, nothing definite has been demonstrated thus far by us but observations along these lines are being continued and will be reported later.

CONCLUSIONS

1 The effects of alpha-dinitrophenol (1-2-4) on basal metabolism, nitrogen balance, urinary organic acids, and body weight were studied in subjects on balanced diets and on diets unbalanced by including maximal amounts of carbohydrate, fat or protein. The dinitrophenol was administered by mouth for periods of from seven to sixteen days. The caloric values of the diets were adequate for the normal metabolism of the subjects.

2 With the use of these diets, the basal metabolism was increased by from 30 to 50 per cent during medication with dinitrophenol.

3 The subjects excreted less nitrogen than they ingested, yet there were definite losses of body weight. Therefore, body proteins probably were not broken down. The output of urinary organic acid was not increased thus indicating that the fats were completely burned without giving rise to acidosis.

4 Accordingly, dinitrophenol may increase metabolism in man, regardless of the energy materials of the diet although it primarily promotes burning of carbohydrates or fat, at least during short periods such as those used in this study and on diets of adequate caloric value.

5 Clinically dinitrophenol is indicated in treatment for obesity and may be therapeutically useful in other disease states with depressed metabolism. Its main advantages over thyroxine or powdered thyroid would seem to be a prompt and vigorous rise of metabolism and an absence of disturbing subjective symptoms. Its use appears to be relatively safe for as long periods as have been studied so far.

Sacramento and Webster streets

5 Cutting C. C. and Taiter M. I. Proc. Soc. Exper. Biol. & Med. 31: 97 (Oct.) 1933.

The Way the Patient Lies in Bed—The fixed rigidity of meningitis is easy enough to recognize in the advanced case. Its early recognition in a case of obscure fever and headache or in subarachnoid hemorrhage may require the cooperation of the hands but the decision to make the further test is often prompted by the appearance of unwillingness in the patient to move his head from the pillow. The adoption of the knee elbow position by a rheumatic child may be the first sign of pericarditis. Gull once surprised an anxious mother by telling her that her daughter with typhoid fever would recover before he had entered the sickroom. He had seen her sitting up in bed as he passed the door.—Ryle J. A. The Training and Use of the Senses in Clinical Work. *Guys Hosp Gaz* 47: 421 (Oct. 28) 1933.

PERSISTING ERRORS IN THE TECHNIC
OF ORAL CHOLECYSTOGRAPHY

A PROCEDURE DESIGNED TO AVOID THEM

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ROCHESTER MINN

A prevalent belief that the intravenous method of cholecystography is consistently and definitely superior to the oral method in diagnostic results has stimulated me to reiterate my own convictions to the contrary and to recount certain rather common errors in the oral technic which may foster the opinion that it is less reliable than the intravenous method. For a long time I accepted the view that the intravenous method was somewhat more trustworthy, although I preferred to give the dye orally as a routine and reserved the intravenous test for cases in which the oral was indecisive. However, with added experience and the adoption of an appropriate oral technic I have become thoroughly convinced that, when the oral method is properly executed, its efficiency is equal to that of the intravenous method and that adverse comparisons of the two methods are usually based on results derived from faulty oral technics.

Now it should be obvious that, to employ the oral test effectively, the dye must be given (1) in sufficient quantity, (2) in readily absorbable form, (3) in such a manner that it will not produce undue nausea or purgation, and (4) under conditions that will not hamper its evacuation from the stomach, its absorption from the bowel or its accumulation and concentration in a normal gallbladder.

From repeated trials with varying amounts I have found it best to give sodium tetraiodophenolphthalein (tetiophthalein), the compound almost universally employed, in a uniform dose of 4 Gm to adults. This is reduced for children in proportion to weight, but I have not found it necessary to vary the dose for small or large adults. If an amount considerably less is given the shadow of the gallbladder is likely to be faint or absent, and considerably larger doses tend to produce vomiting or purging or shadows of excess dye in the bowel which may obscure the gallbladder.

During the experimental stage of oral cholecystography, roentgenologists soon discovered that when the compound was administered in pills or capsules the masses often were not dissolved, and thus the test was vitiated. Even when the capsule or pill coating dissolved, the acid gastric juice, especially that of a fasting stomach, often combined with the exposed drug to form a viscid envelop which retarded or prevented breaking up of the mass. Thus the advantage of giving the compound in solution soon became evident, and this method is now generally employed. If the drug is dispensed in aqueous solutions they should be freshly prepared. It has been my observation that solutions more than twenty-four hours old are likely to produce nausea.

Next in importance to assuring absorbability of the dye is to give it in such a manner that it will be palatable and well borne by the stomach. Many persons tolerate the dye in simple aqueous solution but others find its taste disagreeable or are subsequently nauseated. Both of these objections can be largely overcome or greatly mitigated by mixing the solution with a glassful

of fruit juice or carbonated water. Grape juice is widely used, and I place it first on the list from which the patient may choose.

But it is not sufficient merely to disguise the taste of the dye and dilute it with an agreeable beverage, for even when thus taken on an empty or partially empty stomach, nausea and vomiting occur too often. Hence it is the more common practice to give it in association with a meal, although customs vary as to the quantity and character of the meal and the relative time at which the compound is taken. It seems to me that the significance of these factors is not appreciated as fully as it should be. After extended trials with meals different in amount and composition, and directing the compound to be taken at different times in relation to the meal, I have settled on the fixed routine of requiring the patient to take a full meal containing a minimum of fat and follow it immediately with the dye. This is, in my opinion, the most important factor in oral cholecystography.

The element of fat in the meal deserves especial consideration. More than one examiner has been interested in the plausible hypothesis that by including a substantial amount of fat in the meal the gallbladder would be emptied and thus rendered favorable for reception of the subsequently secreted dye-laden bile. In my hands, however, a faithful trial of this procedure resulted in a marked increase of positive diagnostic errors arising from faintness or absence of the shadow when the gallbladder was normal. Apparently the fat stimulates emptying of the gallbladder during the time when filling should occur. Since fat retards evacuation of the stomach, retarded absorption of dye by the bowel may follow. Delario¹ has shown by experiments on animals that fat renders insoluble a greater amount of the dye in the small bowel. Whatever the reason, I am certain that much fat in the meal will lead to a high proportion of mistakes in diagnosis.

The possibility that physiologic variations in absorption of dye by the bowel might lead to erroneous cholecystographic interpretations is still frequently mentioned, and at the beginning I had this apprehension. Repeatedly it has been emphasized that by the intravenous method a constant amount of the compound is put directly into the blood, whereas by the oral method the amount absorbed might vary so widely as to affect the reliability of the test. Yet I have not noted a single instance in which absence or faintness of the gallbladder shadow could reasonably be attributed to deficient absorption from physiologic causes provided no disturbing factor was introduced by the manner in which the compound was administered.

To avoid interference with absorption of the dye or with its entrance into and concentration by the gallbladder purgatives especially castor oil and other medicines which affect the intestine or biliary organs should not be taken by the patient during or shortly prior to the examination. Before cholecystography made its advent, purgation was often employed to prepare the patient for roentgenography of the gallbladder, and a few examiners persist in such preparation for cholecystography. It is desirable to cleanse the large bowel but this is best effected by having the patient employ enemas on the morning of examination.

The facts and opinions recited are not novel or peculiar to my experience. Indeed most of them were first pointed out by other roentgenologists, and all have

From the Section on Roentgenology, the Mayo Clinic.
Read before the Section on Radiology at the Eighty-Fourth Annual
Meeting of the American Medical Association, Milwaukee, June 15, 1933.

1. Delario, A. J. Pathology of Absorption and Excretion of Sodium
Tetraiodophenolphthalein. *J. Lab. & Clin. Med.* 16: 129-140 (Jan.) 1931.

received wide publicity. Nevertheless, oral technics continue to be exceedingly diverse, and in many instances they violate one or more principles which seem essential to me. Many examiners still give the dye in forms that hinder its absorption prescribe it in inadequate doses, direct it to be taken with a light meal or with one containing an excess of fats or several hours after the meal, or precede the examination with a purgative. Such lapses are often naively mentioned by sincere critics of the oral method and undoubtedly account for the disappointing results obtained. Any comparison of the two methods under these circumstances is bound to be inconclusive and inequitable. Further, I feel that by closer attention to the details described, some of the practitioners of the oral method would be rewarded by a surprising increase in its efficiency. It is to be conceded that rigid standardization of methods retards progress, but neglect to profit from past mistakes is equally hampering.

then cease breathing during the exposure. Voltage is proportioned to the patient's thickness, and the entire setting is equivalent to that which will exhibit details of bone structure. A constant target film distance of 26 inches (65 cm) is employed and the exposure time varies from one-half to one second.

When the first set of roentgenograms is developed, it is inspected so that technical errors can be corrected. If the shadow of the gallbladder is obscured by gas, the technician massages the abdomen to displace the gas or requires the patient to repeat the exam. If the shadow is partly hidden by the ribs subsequent cholecystograms are made after inspiration and arrest.

The efficiency of this routine is exemplified in the results of the work during 1932. Of 4,676 patients examined 732 were operated on, and the cholecystographic diagnosis, whether positive or negative, was confirmed in 696 (95.0 per cent). Among 287 patients with normal cholecystograms, who were operated on chiefly for diseases other than that of the gallbladder,

Cholecystographic Data for 1932

Diagnosis	Observations at Operation									Diagnosis Confirmed at Operation per Cent
	Cholecystitis									
	Cases	Gallstones	Tumors	Not Crusted	Grade 2	Grade 3	Grade 4	Miscel- laneous	Normal	
Normally functioning gallbladder	281	4	2	19	4		1		257	81.5
Poorly functioning gallbladder	39	28 (71.5%)		5		1	2	1	2	91.5
Nonfunctioning gallbladder	106	99 (84.9%)	3	4	3		2	1	3	97.1
Normally functioning gallbladder with stones	124									
Poorly functioning gallbladder with stones	78	294	202	1						99.6
Nonfunctioning gallbladder with stones	92									
Tumor		6	6							100.0
Total		792	415	12	28	7	1	5	2	262

445 cases with positive cholecystographic data 6 errors (98 per cent correct). Of 732 diagnoses 696 (95.0 per cent) were confirmed.

415 cases with gallstones at operation 411 (99.0 per cent) with positive cholecystographic data. Of the 415 cases gallstones were visualized and reported in 294 (70.8 per cent).

410 cases with disease of the gallbladder at operation positive cholecystographic data in 410 (100 per cent).

262 cases without disease of the gallbladder at operation negative cholecystographic data in 277 (85.0 per cent).

At the Mayo Clinic for more than three years we have applied a routine which conforms to the foregoing principles. Reactions in the way of vomiting or distressing purgation have been few and in no case alarming. During the last year employment of the intravenous method was not deemed necessary in any case, and whenever reexamination was required the oral routine was repeated. Details of the procedure are as follows:

The patient receives 4 Gm. of sodium tetraiodophenolphthalein dissolved in 30 cc. of distilled water and is given the following printed instructions: (1) At 6 p. m. eat supper of usual amount, but without eggs, cream, butter or other fats. (2) Immediately after supper, empty the entire contents of this bottle (the dye) into a glassful of grape juice, stir well and drink all. (3) Do not take a laxative or any other medicine. (4) At 7 o'clock next morning take a rectal injection of warm salt solution until the water returns clear, and (5) do not eat breakfast, you may drink water, black coffee or clear tea.

Cholecystograms are made at the fourteenth and the sixteenth hour after the dye is taken, and again at the twentieth hour after the patient has taken a glassful of milk and cream in equal parts with his lunch.

For roentgenography the patient is placed in a comfortable position prone on the table, which is equipped with a flat Potter-Bucky grid. He lies with his cheek to the pillow, his arms forward and his ankles supported by a cushion. To secure thorough immobilization, a broad canvas band is drawn tightly over his back. He is required to exhale deeply and

surgical exploration confirmed the cholecystographic diagnosis in 257 (89.5 per cent). It is well known that the highest percentage of errors is caused by diseased gallbladders which maintain their function sufficiently to produce a normal shadow. The percentage of errors in such groups would probably be increased if the intravenous method were superior in eliciting shadows of functioning gallbladders. Of 445 patients with positive cholecystographic data, 439 (98.6 per cent) had cholestatic disease. It is precisely in this group that skeptics of the oral method would expect a high ratio of errors. Gallstones were found at operation in 415 cases, 411 (99.0 per cent) yielded positive cholecystographic data and the gallstones were diagnosed as such in 294 (70.8 per cent). In six cases in which a diagnosis of tumor of the gallbladder had been made the diagnosis was confirmed, but papillomas were also found in a few cases in which this specific diagnosis had not been made.

The personal equation was scarcely a factor, for many of the interpretations were made alternately by three of my associates in the section, and I attribute these results chiefly to our specific routine. Until such percentages have been surpassed by the intravenous method, I shall continue to apply and recommend the oral method.

ABSTRACT OF DISCUSSION

DR. WALTER L. PALMER, Chicago The accuracy of the oral method is carried out at the Mayo Clinic seems to compare most favorably with that obtained by the intravenous technic employed in other institutions. In a series of 2000 intravenous cholecystographies reported about three months ago by Dr. Ferguson and myself from the University of Chicago Clinics, the accuracy was not as great as that described today. During the past year we have been using the oral method and are quite satisfied with the results obtained, although they are not as good as Dr. Kirklin has reported. The oral method has two important advantages. First it is simpler and less expensive and, second, the reactions are less frequent and less severe. Now that it has been shown to be as reliable as the intravenous method, there would seem to be little reason for continuing to use the intravenous technic. Dr. Ferguson and I attempted a clinical evaluation of cholecystography. We found that the roentgen demonstration of stone was practically 100 per cent accurate. A normal visualization seemed to us to be more reliable than has been indicated in the present report. This discrepancy may be due to a difference in interpretation. In 287 cases of normal visualization, Dr. Kirklin reported finding stones or tumor in only 6 and cholecystitis of varying grades in 24. Considerable difference of opinion exists as to the pathologic diagnosis of cholecystitis. It is possible, according to our conception of cholecystitis, that we should have classified some of these as normal gallbladders. This might account for our attributing a higher accuracy to a normal visualization. A nonfunctioning gallbladder was found by us to be indicative of cholecystic disease in about 90 per cent of our cases when it was accompanied by a history of colic, but the accuracy was much less when there was no clinical evidence of gallbladder disease. Dr. Kirklin reports an accuracy of 97 per cent entirely irrespective of the clinical picture. From the clinical standpoint it is well to recognize that stones may be present in what appears to be a perfectly normal gallbladder roentgenologically and, conversely, that a poorly functioning or a nonfunctioning gallbladder may be perfectly normal. The final diagnosis, in my judgment, must be based on both clinical and roentgenologic evidence. I should like to ask Dr. Kirklin how frequently he finds reexamination advisable, and just what he considers to be the indications for it.

DR. ADOLPH HARTUNG, Chicago I should like to ask the author whether he makes any attempt as a routine to make an opaque meal examination in connection with the dye test. Before the dye test was used as frequently as it is now, a good deal of reliance was placed on the secondary gastrointestinal examination in connection with gallbladder disease. Since that time most of these cases I believe, are not checked up by such an examination. In quite a large number of cases in which the dye test was made as a routine procedure, the results were negative and an opaque meal was given for secondary signs. It seems to me that the percentage of error, especially in the cases of cholecystitis, might be brought down considerably by checking up in some way such as this. I have found in connection with normal gallbladder shadows that the meal gives some of these secondary signs either functional or organic indicating adhesions or gallbladder disease so that the percentage of error could be brought down materially.

DR. PAUL C. HODGES, Chicago Until a few years ago I used the intravenous method almost exclusively but one or two serious accidents with it caused me to change to the oral method. I supposed that the change was temporary until the difficulties could be overcome with the intravenous injection but as so frequently happens I have drifted along into a permanent arrangement without being particularly careful to be sure that the oral dye was being given in the best possible fashion. From what Dr. Kirklin says it is obvious that I have been making some mistakes. He uses 4 Gm. of dye and I have been giving only 3 Gm. He takes pains to put the patient in a comfortable position and has him suspend respiration in the expiratory phase. I have not paid much attention to the patient's comfort and have had him hold his breath on inspiration. Dr. Kirklin has the patient reach up and hold his own nose which I suspect is a very helpful maneuver in assuring suspended respiration. I have had an attendant hold the patient's nose in particularly difficult cases but I do this as

little as possible because I don't like to expose the attendants to the rays. The importance of complete immobilization cannot be overemphasized, and so Dr. Kirklin's efforts directed to that end are of great practical importance. I have had a little experience with rapid stereoscopic exposures made with the patient standing in front of a vertical cassette changer, a Lysolm stationary grid interposed between him and the film. Films of this sort hold great promise. I should like to know whether Dr. Kirklin is using the pure dye or one of the commercial preparations containing a vehicle and flavoring matter.

DR. H. A. OLIV, Chicago I think that I have had better success using the pure salt and dissolving it in water and mixing it with grape juice. In the event that the patient is unable to take grape juice, I use any fruit juice, because it is the acid in the fruit juice that precipitates the salt, which is redissolved when it enters the duodenum. Recently I have been interested in the complication of diarrhea. It occurred to me that giving camphorated tincture of opium with the dye would overcome this objection. I think that in the controversy about oral and intravenous methods one important matter has been overlooked, and that is the chronically inflamed gallbladder which is out and out clinically a surgical case. I think that Graham's appreciation of the use of the liver test combined with the salt should not be overlooked. That is called iso-iodeikon (phenteiothaleum sodium) and I suppose it is as familiar as iodeikon (sodium tetraiodophenolphthaleum). By ascertaining the liver index one is able to obtain the amount of liver damage and the degree of operative risk many days prior to operation. I agree with Dr. Kirklin that the fat meal is of decided advantage especially to show when the gallbladder is almost completely empty or partially empty. Last month I observed three gallbladders which appeared normal in a cholecystogram. These were three strawberry gallbladders, and I should like to ask Dr. Kirklin whether he has had a similar experience.

DR. B. R. KIRKLIN, Rochester, Minn. I have reported only cases which have been checked pathologically with the exception of those cases in which the operation was for other abdominal conditions and the gallbladder was merely palpated or inspected and determined to be normal and therefore not removed. Some one has asked regarding the indications for reexamination and what percentage of the cases are reexamined. The indications for reexamination are unsatisfactory films or any doubt that the patient has followed instructions. Approximately 8 per cent of the total number of the cases are reexamined. The dye is usually repeated the night following the first examination. In reviewing those cases in which a normal functioning gallbladder has been reported and small stones have been found, it has invariably been learned that the cause of the error has been an attempt to interpret films of inferior quality in that there was movement on the part of the patient or gas in the overlying segment of bowel which obscured the stone shadows. I feel that if one has satisfactory cholecystograms and the gallbladder is functioning normally, stones can invariably be ruled out. As evidence of the importance of meticulous technic in cholecystography the percentage of accuracy has increased hand in hand with the improvement in technic. I have not followed the method of examining the stomach and gallbladder on the same day. I prefer to make cholecystograms on the day preceding examination of the stomach, although I can see no reason why they cannot be made the same day. Dr. Hartung mentioned the diagnosis of gallbladder adhesions which brings up a very important question. I have little confidence in my ability to diagnose gallbladder adhesions. Early in this work I thought I could recognize adhesions by deformities of the gallbladder contour, but I have since learned that there is no relation between adhesions and deformity of the gallbladder wall in cholecystograms nor does a smooth gallbladder contour rule out adhesions in my experience. Dr. Hodges has asked what dye is used. For some time I have employed sodium tetraiodophenolphthaleum and have found it a most satisfactory preparation. I do not use camphorated tincture of opium as a routine but I can see some advantages in its use. Some one has asked regarding the strawberry gallbladder. I have found that the cholecystograms of an uncomplicated strawberry gallbladder will almost invariably show that it is functioning normally.

STIFF, PAINFUL SHOULDERS, EXCLUSIVE OF TUBERCULOSIS AND OTHER INFECTIONS

EDSON B. FOWLER, M.D.

EVANSTON, ILL.

This article is limited to (1) the enumeration of a number of terms for stiff, painful shoulders with practically the same clinical syndrome, (2) an analysis of the pathologic changes found in dissections, autopsies and operations, (3) a study of the role that rupture of the supraspinatus tendon, capsule and subacromial bursa plays as an etiologic factor, (4) a review of a few cases to emphasize the importance of apparently trivial symptoms, usually overlooked or neglected as unimportant, (5) a brief outline of the essentials of treatment, based largely on a study of 340 shoulders in dissecting rooms, (6) a description of a simplified operation for tendon and capsule repair.

In particular, my purpose is to direct attention to evidence that rupture of the supraspinatus tendon is apparently the primary exciting cause of most "stiff, painful shoulders," and that an early recognition of that fact, with prompt proper treatment, will bring about much earlier and better end-results.

Duplay,¹ three score years ago, described an involvement of the subacromial bursa from trauma and named this condition "scapulo-humeral peri-arthritis." Dickson and Crosby² used the term "peri-arthritis of the shoulder" in their recent analysis of 200 cases. And Codman,³ a pioneer in research work on the shoulder used "rupture of the supraspinatus tendon," believing such a term to be descriptive of a constant part of the pathologic process found in these shoulders. Royal Whitman⁴ used the term "stiff, painful shoulders" and "peri-arthritis of the shoulder" synonymously.

In the evolution of the shoulder from a walking weight-bearing joint to a weight-carrying one, much strength, stability and durability have been lost. The shoulder joint has the greatest range of motion and the most extensive moving capsule, and, relatively, the glenoid has the smallest, shallowest joint socket. Such a joint is particularly prone to injury, so that it is not surprising that Codman found a complete rupture of the supraspinatus tendon to every twenty shoulders examined, and one incomplete rupture to every third shoulder. In a study of 340 shoulders, my observations were 1 complete rupture of the supraspinatus tendon to every 28 shoulders examined, and 1 incomplete rupture to every 6 shoulders.

The complete ruptures showed much fraying of the tendon and almost no signs of repair, while seventeen of the forty-four incomplete ruptures of the supraspinatus tendon had healed, nearly closing the rupture gap. Had all the incomplete ruptures been immobilized with the arm well elevated, it is my belief that there would have been sufficient approximation in the entire forty-four to result in a satisfactory healing of the damaged tendons and contiguous structures.

Deposits were found in more than a third of the cases of rupture. These deposits were in and about the supraspinatus tendon, as stressed by Brickner,⁵ Codman, Moschcowitz⁶ and others. It was a significant fact that practically all of the gross pathologic changes found were in and about the ruptured supraspinatus tendon. Furthermore, in the absence of tears of the tendon, practically no degenerative changes, such as fatty, chalky or putty-like deposits, were found. Apparently, rupture was the first link in the chain of pathologic changes.

Dickson and Crosby, "in an effort to elucidate the relationship of trauma, foci of infection and metabolic factors in the etiology," concluded that "there must be some common denominator, which cannot be accounted for at present." In the light of Codman's and my own research, that "common denominator" may be rupture, much or little, of the supraspinatus tendon. The rupture almost universally overlooked, for reasons to be

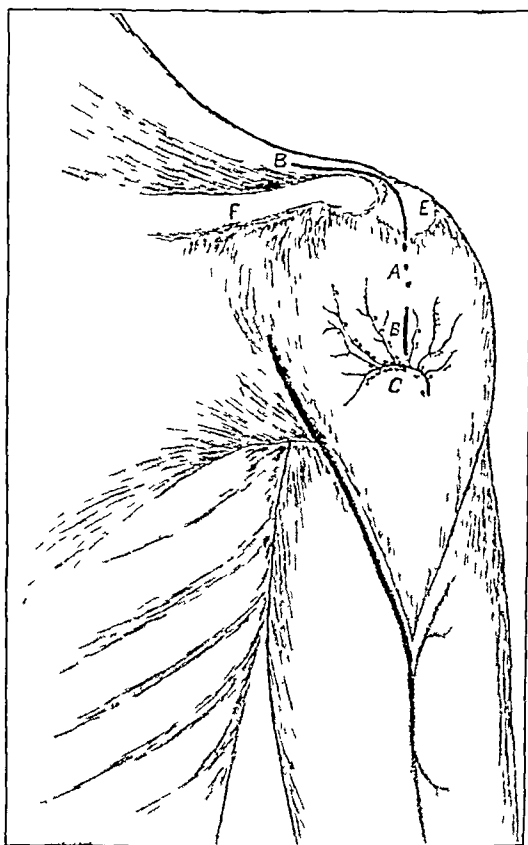


Fig. 1—Landmarks of the shoulder. A (dotted line) the incision for exploratory operation. B extensions of the incision for repair of the capsule and tendon. C the circumflex artery and nerve which lies between the humerus and the deltoid with branches entering the muscle. E the acromion. F the clavicle.

given later, may be and probably is the primary exciting cause, and inherent structural weakness of the shoulder, a poor blood supply, metabolic factors and foci of infection are secondary, though important, once a rupture has occurred.

Codman believes that virtually every rupture of the supraspinatus tendon is caused by contraction of the supraspinatus muscle and that tears are rarely produced by direct trauma. For the most part, I concur.

From St. Francis Hospital.
Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

- 1 Duplay, Simon. *Arch. gen. de med.* Paris 2: 513, 1872.
- 2 Dickson, J. A. and Crosby, E. H. *Periarthritis of the Shoulder*. J. A. M. A. 99: 2252 (Dec. 31), 1932.
- 3 Codman, A. E. *Boston M. & S. J.* 150: 371, 1904; 154: 613, 1906; 159: 533, 576, 615, 677 and 723, 1908; 164: 708, 1911; 165: 115, 1911; 196: 381, 1927. *Surg. Gynec. & Obst.* 52: 579, 1931.
- 4 Whitman, Royal. *A Treatise on Orthopedic Surgery*. Philadelphia: Lea & Febiger, 1930.

5 Brickner, W. M. *Am. J. M. Sc.* 149: 351, 1915. *Am. J. Surg.* 30: 108, 1916.

6 Moschcowitz, Eli. *Am. J. M. Sc.* 150: 115, 1915.

in that behalf. Occasionally, a dislocation of the shoulder is accompanied by a tear of the tendon and capsule, for example, two such cases were found in my work, and Wilson⁷ reported one case. Other cases are as follows:

One of Wilson's patients produced a complete rupture of the tendon in an attempt to toss a stone up out of a trench. Another was pulling down on a chain hoist, his hand slipped, and in his effort to regain his balance, violent action of the supraspinatus muscle ruptured the supraspinatus tendon.

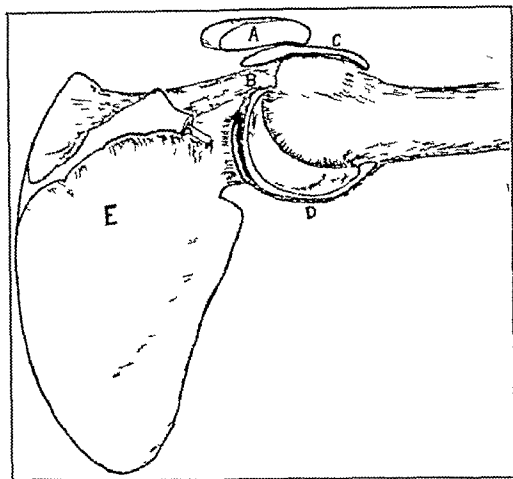


Fig 2—A A represents the section of acromion removed B the supraspinatus tendon C the subacromial bursa D the lower portion of the capsule E the infraspinatus fossa with the infraspinatus muscle and tendon removed

One of Codman's patients produced a rupture in an effort to recover his balance, when a saddle girth he was tightening suddenly broke.

One of my patients, a middle-aged woman, slipped as she stepped onto an oiled floor. As her feet shot forward, she raised her arms to regain her balance and thus ruptured the right supraspinatus tendon.

Another patient, a young man of 24, not accustomed to hard work, undertook the task of passing up cases of soda pop. After six weeks of this hard labor, which put the supraspinatus tendon to constant strenuous use, he noticed one evening after work a dull aching pain in the right shoulder. He was unable to resume his work because of pain and disability. When I saw the case six months later there was limitation of abduction with extreme atrophy of the spinatus muscles. A coarse crunching crepitus was felt about the greater tuberosity as it approached the acromion. Pain and tenderness were present in the same area. It would appear that repeated sprains, or a rupture of a few fibers at a time had occurred till at the end of six weeks the entire tendon was torn from its attachment. In this case now over two years old the patient has not been operated on though Wilson operated in a similar case in which the patient produced piecemeal by his routine folding of cloth a complete rupture of the supraspinatus tendon.

Another patient of mine, a middle-aged blacksmith, in starting down to the cellar lost his balance and in his effort to regain his equilibrium the sudden contraction of the spinatus muscles ruptured his supraspinatus and infraspinatus tendons, making a gap 2 by 2 1/2 inches (5 by 6.3 cm) through which the head of the humerus appeared at operation.

The history in conditions of the shoulder is of extreme importance and in taking it the most painstaking inquiry as to every possible detail from many angles will with surprising regularity disclose that there has been a sudden stress on the spinatus tendons or that there has been long continued overuse.

A surprising and misleading fact is the little or no pain noticed at the time of the rupture, whether the latter occurs at once or piecemeal, as in the cases described. The pain has a sticking or cutting quality and lasts but a moment, so that the incident is usually forgotten. Some hours may elapse before aching and disability set in, dependent somewhat on the extent of the trauma. When there is extensive rupture, few patients complete the day's work. At night the pain is much worse, often preventing or interrupting sleep. On abduction, pain is usually cutting as the arm nears the horizontal, and the patient may drop his arm to the side, owing in part to weakness and in part to pain. Pain is complained of in the deltoid area, and it may radiate up or down. Tenderness is often less marked the first two or three weeks than later. It is usually elicited around the greater tuberosity, particularly proximal to its upper border. In complete rupture of the supraspinatus tendon, well marked atrophy of its muscle has been observed as early as two weeks after the rupture occurred.

Ridlon⁸ confessed, "that the difficulties encountered in treatment of injuries to the shoulder joint have always been more troublesome and more obscure than the difficulties in treating all other joints put together." Lovett⁹ once said "No common injury is so badly treated, save possibly the spine, as injuries to the shoulder." Part of the reason for this unsatisfactory treatment would seem to be a lack of recognition of the fact that seemingly trivial trauma may, and frequently does, produce a tear in the structures of the shoulder joint, and that the tear is often accompanied by little or no pain. Thus lack of recognition has come about, in part, because shoulders are rarely operated on for relief, and painful shoulders, not being fatal, provide no autopsies.

However, because of the astonishing number of ruptures found in routine examination of shoulder joints by Codman and myself, it would seem justifiable, in cases of stiff, painful shoulders not greatly improved in two or three weeks by immobilization in abduction,

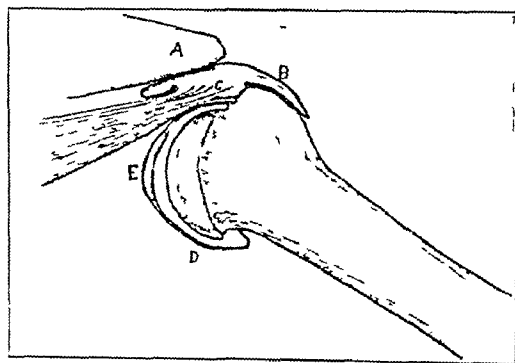


Fig 3—A is the acromion B the subacromial bursa C the partially ruptured and frayed supraspinatus tendon D the capsule and subacromial bursa E the glenoid cavity

to assume that a rupture has occurred. Of course, along with the local treatment a careful general examination and treatment of any abnormality, such as diabetes, gout, hyperthyroidism or hypothyroidism and toxic infection should not be neglected.

In cases where a steady marked improvement has not occurred during the first three weeks it is my belief that an exploratory operation should be done under

⁷ Wilson, P. D. Complete Rupture of the Supraspinatus Tendon. J. A. M. A. 30: 43 (Feb. 1) 1911.

⁸ Ridlon, John. Surg. Gynec. & Obs. 74: 553 1912.
⁹ Lovett, J. W. Surg. Gynec. & Obs. 74: 437 1922.

local anesthesia to settle the diagnosis and to insure comparatively early proper treatment

OPERATION

Step 1 is performed under local anesthesia to confirm or refute the diagnosis, step 2, under general anesthesia to repair the rupture

1 The exploratory incision starts over the acromion, $\frac{1}{4}$ inch (2 cm) back of its tip, and extends distally

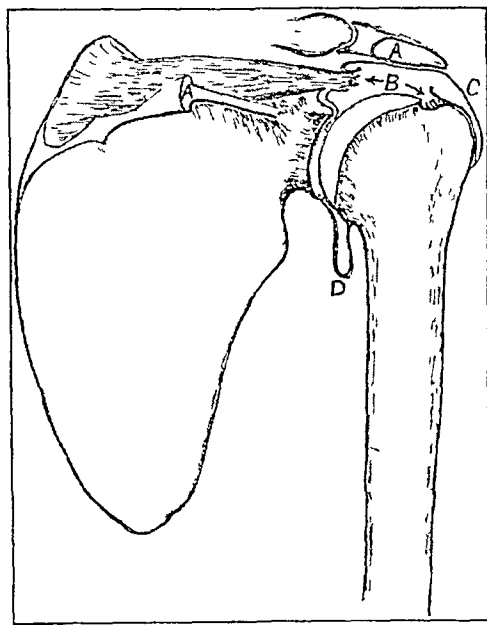


Fig 4—A A is the sector of acromion removed B complete rupture of the capsule subacromial bursa and supraspinatus tendon with wide separation C the subacromial bursa with a wide opening into the shoulder joint D the dependent capsule

2 inches, parallel to the fibers of the deltoid muscle. The deltoid fibers are separated, and the underlying subacromial bursa is opened. If the floor of the bursa is intact there is no rupture, in which event the incision is closed, and the convalescence will not be appreciably delayed.

2 In the case of a rupture needing repair, the second step of the operation is continued under a general anesthetic. The outer end of the incision is extended 1 inch (2.5 cm) and the inner end 2 inches. The acromion is cut through from without inward, starting $\frac{1}{2}$ inch (1.2 cm) back of the acromioclavicular joint. A gutter is cut along the upper border of the greater tuberosity, and the edge of the retracted rupture is trimmed, while the clavicle is retracted forward. Through the base of the greater tuberosity four or five drill holes are passed from without, emerging in the gutter. Strong linen or silk on a curved needle is passed from without through hole 1, then through the torn tendon and back through hole 2. A second suture is passed similarly through hole 2, then through the tendon and back through hole 3, and so on, till all the sutures are placed. The sutures are then tied, while the arm is elevated. The bone springs back into place as soon as traction is withdrawn. A few buried sutures are inserted and the skin is closed with a continuous dermal suture. The arm is put up, well abducted, on a light supporting splint for two weeks and then is placed in a sling. The patient is encouraged to use the arm as soon as the soreness from the operation subsides.

SUMMARY

1 Stiff, painful shoulders, periarthritis of the shoulder, subacromial bursitis and rupture of the supraspinatus tendon are not strictly independent entities. They are the links in the chain of pathologic changes found in chronically disabled shoulders.

2 Rupture of fibers of one or both spinatus tendons with the inevitable injury of the capsule and subacromial bursa, is the beginning of most pathologic processes in the shoulder, which progress needlessly because of hazy diagnosis and poor treatment.

3 The great frequency and abundance of pathologic change found in routine dissection of shoulders indicates that it is largely overlooked and, for the most part not even suspected in cases of disabled shoulders.

4 Early diagnosis and consequent proper treatment will make operative treatment of incomplete ruptures rarely necessary.

5 Late diagnoses and late operations mean relatively poor end-results.

6 The operation herein described seems to have advantages over other operations for repair of one or both spinatus tendons.

ABSTRACT OF DISCUSSION

DR EDWIN W. RYERSON, Chicago: Dr Fowler has done a fine piece of work in his investigation. I have seen very few patients in whom the supraspinatus tendon had been torn. I have seen several old cases in which operation would not have been advisable and have refused to operate. Two weeks ago I saw a boy who had a reasonably recent tear which was easily demonstrable because a little piece of the greater tuberosity had been torn off. I think that operation should be done in this case but I question very much whether the old chronic tears will give good enough results after operation to make it worth while. I have done none in the old cases. The cases presenting the masses of gritty, calcareous matter, either in the supraspinatus tendon or, as I think in some cases, in the bursa sometimes require operation and sometimes do not.

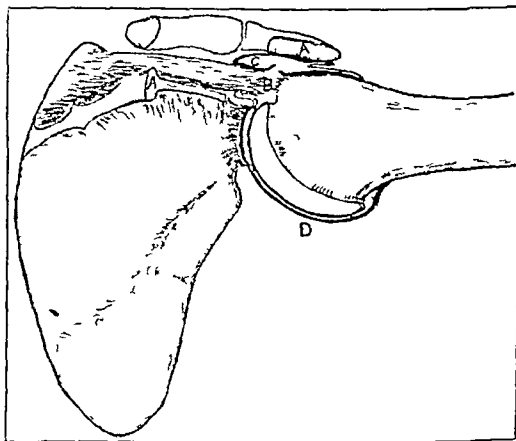


Fig 5—A A is the sector of acromion removed B complete rupture (as in fig 4) almost approximated by elevation of the arm C the subacromial bursa D the lower portion of the capsule

DR F. J. GAENSLEN, Milwaukee: Dr Fowler has done an excellent service in further elucidating the subject of stiff and painful shoulders. I enjoyed especially his collection of anatomic specimens in the Scientific Exhibit. One cannot but be impressed with the correctness of Dr Codman's and Dr Fowler's statements that the injury is of relatively frequent occurrence. I cannot explain the fact that so few cases are seen with marked late disability in the absence of operative repair or adequate conservative treatment at the time of the injury. The gradual fraying of the supraspinatus tendon by repeated

minor injuries, associated with overuse of the arm in abduction, is apparently not unusual, although more severe single traumas undoubtedly are responsible for the majority of actual tears. A few years ago, while I was in Boston with a small group of Wisconsin surgeons, Dr. Codman discussed this problem for us at length. I remember his saying that the diagnosis of bursitis is perhaps no more justified than a diagnosis of peritonitis. Differentiation of the cases into actual rupture, complete or incomplete, calcified deposit in the tendon, or chronic adhesions should be possible in the great majority of cases.

DR. EDSON B. FOWLER, Evanston, Ill. In regard to Dr. Ryerson's hesitancy to operate in old cases it is well to state that Codman and Wilson reported old cases. Twenty per cent of the patients were able to resume their former occupations. In 80 per cent the condition was more or less improved and the patients were able to do a variable amount of light work. The operation as performed by Codman or Wilson gives sufficient lysis of the capsule and tendon to permit adequate closure of the rupture gap. In the old cases it is necessary to incise the capsule along the anterior and posterior borders of the tendon as well as under the tendon where it leaves the capsule. This permits the suture of the retracted structures to the greater tuberosity with a good closure of the rupture gap. Very rarely, deposits are found in the subacromial bursa, as stated by Dr. Ryerson and as found by myself and others. The piecemeal ruptures and associated erosions noted by Dr. Gaenslen are far more common than the sudden complete rupture of the tendon and associated capsule and bursa.

USE OF PHENYLMERCURIC NITRATE IN TINEA AND YEAST INFECTIONS OF THE SKIN

PRELIMINARY REPORT

BENJAMIN LEVINE, MD
CLEVELAND

During the past three years, Weed and Ecker¹ reported on two new mercurials showing unusual bactericidal and fungicidal properties coupled with low toxicity for man and animals. Of chief interest and importance was phenylmercuric nitrate.

They studied the effect of phenylmercuric nitrate on twenty pathogenic fungi of man and it was shown that with the exception of *Achorion violaceum* all the implanted fungi failed to grow in mediums containing 5 and 1 per cent of the saturated solution of phenylmercuric nitrate. Subcultivation on new mediums proved that the majority were killed, since only two (*Trichophyton acuminatum* and *Achorion violaceum*) from the medium containing 5 per cent saturated solution of phenylmercuric nitrate grew. However, from the medium containing 1 per cent five subcultures showed growth. They also showed that phenylmercuric nitrate readily killed six strains of wood-destroying fungi. Hatfield,² one year later corroborated the fungicidal value not only of phenylmercuric nitrate but also of phenylmercuric chloride.

The high bactericidal efficiency of phenylmercuric nitrate has also been confirmed experimentally by Birkhaug³ and clinically by Biskind.⁴

At the suggestion of Dr. L. F. Ecker the effectiveness of this compound (phenylmercuric nitrate) was studied in the treatment of fungous and bacterial infections of the skin.

FORMS OF MEDICATION

As it was necessary to determine an efficient concentration of the drug for dermatologic use and to find an effective vehicle, a number of mixtures were prepared and employed. The optimum concentration was derived in the following manner. A lotion consisting of phenylmercuric nitrate 1:1,000 in an emulsion of gum tragacanth was used. The product was highly efficient but its continuous application proved to be moderately irritating to the skin, owing either to too great an original strength of the emulsion or to evaporation and resultant concentration. A lotion was then prepared containing phenylmercuric nitrate in a dilution of 1:1,250. This was decidedly less irritating. Application of a simple aqueous solution of phenylmercuric nitrate 1:1,250 by itself produced good results, but the possibility of drying contraindicated its use. Subsequently, an ointment was prepared consisting of equal parts of wool fat and an aqueous solution of phenylmercuric nitrate 1:1,250, the solution being gradually added to the lanolin in the course of emulsification in an electrical mixer. In general, this ointment containing the drug in a concentration of 1:2,500 proved more satisfactory than the lotion. After further experimentation an ointment was made containing the phenylmercuric nitrate in a concentration of 1:1,500 by weight with the addition of 10 per cent of glycerin. This ointment proved to be most satisfactory. A 1:1,000 concentration again proved too irritating for general uses. The ointments found to be most efficient were made with two hydrophilic bases containing cholesterol derivatives. Both these ointment bases containing phenylmercuric nitrate in a dilution of 1:1,500 gave excellent results and showed apparently better penetrating properties. They were unquestionably superior to the ordinary hydrous wool fat preparations.

METHOD OF APPLICATION

The patient was instructed to cleanse thoroughly all affected parts prior to the use of the ointment or lotion. This was done by means of soap and water and a soft brush. A moderate amount of one of the mixtures was gently rubbed into the infected area twice daily, night and morning. Overtreatment was avoided.

NUMBER OF CASES

Of 262 cases studied 205 were carefully followed up and the patients discharged as cured. The remaining 57 patients were seen but once after the beginning of treatment and the data in these cases remained incomplete. Of the 205 patients, 193 had tinea and the remaining 12 had interdigital saccharomycosis.

INTERDIGITAL SACCCHAROMYCOSIS

It has been a common experience among dermatologists to find interdigital saccharomycosis unresponsive to therapy. For this reason special attention was paid to this type of infection because favorable therapeutic results would here definitely establish the value of the drug. The results obtained with both the lotion and the ointment proved that they were efficient in the treatment of this intractable infection: twelve out of fourteen patients being cured and the other two markedly improved. Occasionally the lotion proved superior to the ointment. The length of time necessary to effect the cure varied from two days to four weeks with an average of two weeks. One patient cured in two days, used a lotion in the dilution of 1:1,000.

The outstanding case was that of Mrs. K. K. who had had the infection constantly for twelve years.

From the outpatient department, Mount Sinai Hospital, Cleveland 1.
1. Weed, L. A. and Ecker, F. F. *J. Infect. Dis.* 49: 4-9 (Nov.) 1931.
2. Hatfield, T. *American Wool Textures Ass'n Annual Report* Jan. 26, 1932.
3. Birkhaug, K. E. *J. Infect. Dis.* 57: 50 (Oct.) 1933.
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During this time she was under continuous treatment with various forms of medication, such as tincture of iodine, 5 per cent aqueous solution of copper sulphate, Whitfield's ointment and an ointment containing oil of cassia, oil of cloves and iodine, without results. Phenylmercuric nitrate ointment 1:1,000 was tried and found to be somewhat irritating. A few days later she was given a 1:2,000 ointment, which did not irritate. There was a complete cure in two weeks with no recurrence in three months.

Two of the patients had recurrences, one of whom has since been cured and the other of whom is now under treatment. Usually there was complete relief of pain and pruritus after one application.

TINEAS

Of the 193 cases of tinea treated, all were cured. There was a total of 110 patients with tinea of the feet, 21 of whom had a secondary epidermophytid of the hands. In each instance the epidermophytid cleared up promptly, usually before the tinea of the feet was cured. One of the cases of epidermophytid of the hands showed the importance of proper differentiation between the primary infection and the secondary allergic reaction. This patient presented a vesicular scaly eczematoid eruption on both hands of seven years' duration. At no time were the hands free of this eruption, being worse at certain times than at others. Examination of the feet when first presented showed no apparent disease. After three weeks with phenylmercuric nitrate ointment 1:2,000 applied twice daily to the hands, there was no improvement. The ointment was discontinued and roentgen therapy instituted. The first treatment caused most of the lesions to regress. Further treatments, however, aggravated the lesions. A total of 2 skin units was given. One week after the last roentgen treatment, when the hands were at their worst, the patient's feet were reexamined. They showed some fissuring and scaling under each of the little toes. The patient was instructed to apply the ointment on her feet only. Four days later her hands and feet were both healed. There has been no relapse in a period of over five months. Similar results were obtained in other cases with epidermophytid or trichophytid eruptions. In each instance the treatment of the primary focus relieved the patient from the secondary eruption.

Twenty patients with tinea of the hands were treated. All of these were cured. They did not show involvement of the feet.

Of the twenty-four patients with tinea cruris all were cured by the use of the 1:1,500 ointment.

Five patients suffered from tinea of the anal region. The outstanding feature was the relief from pruritus noted usually after one application of the ointment. The same is true of pruritus vulvae. However, further investigation of a larger series of these cases is necessary.

E. G., a man, aged 36, had severe pruritus and due to tinea for the past few years. During this interim he was seen by several physicians, one of whom gave him seven roentgen treatments. Roentgen therapy produced temporary relief lasting from one to four months. He also had used 2 per cent salicylic acid in alcohol and later a modified Whitfield ointment. The latter treatment gave him partial relief only and later no relief at all. When seen, he was exhausted and had lost con-

siderable weight from lack of sleep caused by the severity of the pruritus. The anal region and intergluteal cleft were macerated, excoriated and infiltrated, the process extending down over the perineum to the scrotum. When the patient was seen three weeks later, the tinea was completely cured. The pruritus, he reported, disappeared after several applications of the ointment. There was no recurrence ten months later.

Five cases of tinea of the axillary regions were treated with complete relief. In one case the 1:1,000 lotion proved to be superior to the ointment.

Tinea circinata of the glabrous skin presented an interesting series. Twenty-one cases were studied occurring between the ages of 1 and 60 years. The most interesting case was that of Mrs. W., who had a generalized tinea corporis of seven or eight years' duration. A large variety of ointment and roentgen therapy had been used to no avail. The x-rays were used to the extent that it was feared that any further irradiation might cause an atrophy. Within three weeks the patient was completely cured by a 1:1,250 lotion of phenylmercuric nitrate. Another patient showing an extensive tinea circinata of the arms and legs responded more readily to the lotion than to the ointment. Most of the patients were treated with the ointment. The time necessary to effect a cure varied from three days to one month, as a rule, ten days was sufficient.

Tinea versicolor responded more favorably to the lotion than to the other preparations. All six cases seen cleared up with the lotion in the dilution of 1:1,000. As a rule this type of tinea responds in from three to seven days.

So far, the number of cases of tinea of the scalp and face treated with phenylmercuric nitrate are too few to justify any definite conclusion. One case of tinea of the scalp was cured after two or three months of treatment. Four other patients, on returning at the end of one week, showed definite improvement. One case of tinea barbae was cured in ten days.

The majority of our cases were gathered from the dispensary and a considerable number of cases consisted of physicians and their families. It was among these that the most startling and satisfactory results were obtained because of more intelligent and consistent use of the drug. Many of our dispensary patients obtained relief and failed to return, while others used the drug spasmodically. These facts also account for the longer duration of the treatment in these cases.

It is necessary to point out that occasionally patients sensitive to mercury are encountered who receive mercurial burns from this treatment. All those seen in this series (seven) were readily relieved by the use of a bland ointment.

CONCLUSIONS

1. In a series of 262 cases of tinea and yeast infections of the skin, phenylmercuric nitrate in ointment or lotion form was used. Two hundred and five cases were cured, the remaining fifty-seven cases were definitely improved but these were not followed to completion of treatment.

2. Phenylmercuric nitrate proved highly efficacious in the treatment of these cases producing cures when other standard medicaments had failed.

3. In the great majority of cases, no untoward results have been seen from its continued use. In the occasional

cases in which irritant effects occurred these cleared up readily on withdrawal or on substitution of a less concentrated mixture

4 All the phenylmercuric nitrate used in this series of cases was prepared by Dr Ecker and conforms to his specifications

5 Phenylmercuric nitrate is presented as a distinct contribution to the dermatologic armamentarium

TUBERCULOSIS AMONG NEGROES

SOME OF THE PROBLEMS THAT COMPLICATE ITS CONTROL

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A comprehensive review of the literature dealing with tuberculosis among Negroes, and conferences with many of the outstanding men who are interested in this problem, indicate that control measures are complicated by a lack of definite information on several points of fundamental importance, which often reveals itself in a multitude of conflicting opinions

The present status of knowledge on several of these points will be briefly discussed in the light of recent contributions, consideration being given to the extent to which control measures appear to be handicapped by lack of definite information

DO NEGROES HAVE A RACIAL LACK OF RESISTANCE AGAINST TUBERCULOSIS?

A vast amount of literature has been written on whether Negroes have a racial lack of resistance against tuberculosis. In general, it may be said that the majority of authors are of the opinion that they do, but many publications, particularly those of former years, appear to be based on conjecture rather than fact. Within the past year, three very interesting contributions have appeared dealing with this racial factor

In view of Bogen's statement that "an investigation of the fate of a group of patients known to have been already infected with the tubercle bacillus and living under approximately similar conditions may shed some further light upon the problem of racial susceptibility to the disease," special interest attaches to a study by Dr Taliaferro Clark of some 6,000 hospitalized veterans, a group somewhat removed from the cloud of economic conditions and in which he believes the two races are economically equal. The study showed that "upon final disposition of the cases admitted while the disease was in a moderately advanced stage, 50 per cent of the colored and 70 per cent of the white patients showed improvement quiescence arrest or apparent arrest while 39 per cent of the colored as compared with 17 per cent of the white patients died while in hospital." Dr Clark points out that while in these economically equal groups the Negro death rate is double that of the white, in unselected population groups it is usually three or four times as high. His conclusion is that "the race factor is working in combination with the economic one against the Negro."

Pinner and Kasper reiterating that "probably the only definitely established fact about immunity is the diminution of spread in a sensitized organism as com-

pared with a nonsensitized one," proceed to show from postmortem examination of 303 Negroes and 219 white patients dead of tuberculosis that

1 Hematogenous spread occurs twice as often in Negroes as in white persons

2 Spread by way of the lymphatics occurred nearly seven times as frequently in the Negro as in the white group whereas isolated phthisis was present in nearly half the white patients and in less than 3 per cent of the Negroes

These authors while recognizing the fact that environmental conditions are one of the most important factors causing the high incidence of tuberculosis among Negroes, believe that there is also a true racial difference

Dr F C S Bradbury, in his investigation of incidence of tuberculosis in certain Tyneside districts, found a greater incidence of tuberculosis in the Irish than in the English. Even when such factors as poverty, overcrowding and large families were controlled he concluded that "there is evidence of a racial factor which is responsible in part at least for the relatively high incidence of tuberculosis in the Irish."

Now just what do the various authors mean by a racial factor? Clark and Bradbury are not specific on this point. Pinner and Kasper have in mind a true genotypic difference (anatomic or physiologic). Most of the earlier authors and many of the more recent ones, however when they refer to a racial factor, mean, to quote Graudy, for example "the result of the Negroes' relatively short period of contact with tuberculosis." As Reuter points out, lack of experience with a disease is a historical and not a racial or biologic fact. Race has nothing to do with it, since two groups of the same biologic ancestry would show similar relative differences in immunity to a disease if through a series of generations one had been exposed to its selective efforts and the other isolated from its attack.

It would appear, then, that while conclusive proof is lacking the weight of opinion and evidence indicates that in addition to his environmental and economic handicaps the Negro has a lack of resistance to tuberculosis, which may be due to a true biologic difference or merely a present expression of unlike historical experience.

While accurate information as to this lack of resistance would be of the utmost interest, it would probably have but little effect on control measures. To change the anatomy or physiology of the Negro would be a difficult undertaking and only time can correct his lack of historical experience. In the meantime however, the importance of his environmental and economic handicaps is universally recognized, and this must obviously be the point of attack.

WHAT IS THE MOST EFFECTIVE TUBERCULOSIS CONTROL PROGRAM FOR THE SOUTHERN STATES WITH THEIR LARGE NEGRO POPULATION AND LIMITED FINANCIAL RESOURCES?

Not only is the Negro handicapped in his fight against tuberculosis by his low economic status, both as an individual and as a race but the fact that the majority of the Negro population is concentrated in a relatively small number of states, whose financial resources are meager still further complicates the problem of control.

Despite the large northern migration that occurred during the period 1915-1930 nine million Negroes (or

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roughly, three fourths of the Negro population) still live in the following thirteen states, all essentially Southern: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North and South Carolina, Tennessee, Texas and Virginia.

Eight of these states have more than half a million Negroes each, and in nine of them Negroes constitute more than one fourth of the total population.

Even granting the argument advanced by sociologists that with the return of prosperity this trend to the large cities of the North will be resumed, it is evident that for a long time to come the vast bulk of the Negro population will be found in the group of states just enumerated.

Furthermore, of the nine million Negroes living in these states, approximately eight million (or two thirds of all the Negroes in the United States) reside in the rural districts, the towns and the smaller cities of the South, and it is the problem presented by this group that I shall briefly consider.

In general, it may be said that most of the Negroes of this rural, town and small city group live in communities that are unable to finance adequate control measures as defined by present standards. Unlike their cousins residing in the large cities, they must depend very largely on the state to provide facilities particularly in the matter of hospitalization. Several of the states listed make no provision whatever for sanatorium treatment for either white or colored patients, and in most of the others the facilities provided are grossly inadequate.

Certainly, the matter of providing an effective service for the control of tuberculosis among Negroes (or, for that matter, white persons) is an extremely complicated one in many of the Southern states, owing to their low economic status. In fact, one may say that there are as yet in existence no adequate data on which to formulate a program that would be reasonably effective and yet within the financial ability of most of these states, and this is particularly evident at the present time.

I shall consider a few of the attempts at meeting this situation.

Tennessee—The tuberculosis study that is being carried on by the Rockefeller Foundation in Wilkeson County under the direction of Dr. Bishop has as one of its objectives "the development of a program of control of tuberculosis designated to have practical state-wide application."

A qualitative appraisal of tuberculosis nursing service by officials of the state department of public health gives every indication of materially increasing the efficiency of the service rendered, with no additional cost.

Dr. Overton of the City Health Department of Nashville is experimenting extensively with the use of BCG. It is possible that his results and those of others who are working with this organism will be of value, since BCG, if it can be shown to yield favorable results, is within the financial reach of even the poorest state.

Alabama—The diagnostic clinic of the Alabama State Board of Health has already standardized on the use of the paper film.

One of the objectives of the study now being made for the Rockefeller Foundation by Dr. Graham in Opelika is to determine "whether or not satisfactory isolation of the tuberculous patient may be achieved at home by the utilization of portable screened cottages

and screened porches, together with the provision of adequate public health nursing service, and what it will cost to secure effective isolation by these methods."

Georgia—Dr. Haygood is now working on a plan for a district tuberculosis nursing service to be operated in conjunction with the state tuberculosis clinic and financed by small contributions from the counties served. The diagnostic clinic of the state health department is trying out the paper film and also planning a change in procedure which, it is hoped, will enable it to examine a much larger number of patients with only a slightly increased expenditure.

It is evident that while the problem of tuberculosis control in the Southern states is a serious one, it is susceptible of at least partial solution. There is reason for encouragement in the fact that this problem is recognized and that attempts are being made to solve it, and also that the Southern states, despite their financial handicaps, have already made notable progress in other phases of public health work.

IS IT ADVISABLE TO USE COLLAPSE THERAPY IN THE TREATMENT OF TUBERCULOSIS IN THE NEGRO?

It may be said that at present the consensus favors collapse therapy as a therapeutic measure, yet a number of clinicians, notably in the Southern states, still believe that it is contraindicated in the Negro.

Dr. Henry D. Chadwick of Detroit will shortly publish an analysis of the favorable results that he has obtained from the administration of pneumothorax to a large number of Negro patients in the several stages of pulmonary tuberculosis. This contribution should add materially to knowledge on this subject.

As to the effect of this division of opinion on control measures, it undoubtedly is a handicap. There seems little doubt, however, that enough definite evidence will soon be accumulated by Dr. Chadwick and others to put it beyond the realm of controversy.

SYPHILIS AND TUBERCULOSIS

From the studies of Wenger, Ricks and others, it would appear that at least 25 per cent of all rural Southern Negroes have syphilis and there is every reason to believe that urban Negroes have at least as high an incidence. It is therefore of the utmost importance to the Negro race that the role of syphilis in the high tuberculosis death rate be accurately determined.

There still exist two schools of thought as to the relationship between syphilis and tuberculosis. Some authors maintain that there is an antagonism between these two diseases, and inoculation of the tuberculous patient with the syphilitic virus has been suggested as a therapeutic measure. The weight of opinion, however, is that syphilis reduces the natural resistance against tuberculosis, that it is an important predisposing factor, and that its presence renders the prognosis more grave.

With regard to the treatment of the case in which syphilis and tuberculosis are coexistent, the clinician will gain small comfort either from a survey of the literature or from a consultation with his colleagues, there being only one point on which most of the authorities are in agreement, namely, that the iodides should not be used.

Many clinicians advocate the treatment of syphilis with arsenicals, with no qualification as to dosage. Others believe that while the arsenicals should be used the dosage should be materially cut down. Still others

are of the opinion that the arsenicals are contraindicated and that bismuth is the medication of choice. Another group of clinicians believe that they obtain better results if the presence of syphilis is disregarded and do not treat it unless it is causing obvious discomfort.

As long as these questions remain unanswered, control measures will obviously be handicapped. In the event that syphilitic soil is shown to favor the implantation of tuberculosis, additional emphasis must be put on the reduction of the present high incidence of syphilis in the Negro, and it is evident that the present variety of ideas as to therapeutics is not conducive to effective treatment. It is not at all unreasonable to suppose that in answer to these questions lies the possibility of an appreciable reduction in the Negro death rate from tuberculosis.

It is interesting to know that Dr. Aronson of Phipps Institute is now investigating this problem.

CONCLUSIONS

1. At present, the control of tuberculosis, particularly in the Negro, is handicapped by lack of exact knowledge regarding several points of importance.

2. Further research is necessary. Studies such as those now in progress at Phipps Institute and in Tennessee, Alabama and elsewhere should add materially to the present limited knowledge regarding the epidemiologic, pathologic and clinical peculiarities of tuberculosis as it affects the Negro and may aid in the solution of some of the administrative problems involved. Regarding the latter, it is suggested that valuable information may be obtained by studying the various adaptations of administrative procedure that various health departments are making to reach more effectively the Negro population.

3. In view of the important sociological aspect of the problem of tuberculosis among Negroes, this line of approach, which appears to have been relatively neglected, should be further developed, perhaps in conjunction with some of the studies now in progress.

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ABSTRACT OF DISCUSSION

DR. HORTON R. CASPARIS, Nashville, Tenn.: Dr. Guild brought out that Negro children seem to handle first infections as well as white children. That has been my impression, but Negro adults do badly. The Negro children have nothing to do with their first infections; the Negro adults have everything to do with tuberculosis. There is no specific treatment for tuberculosis and whether or not one gets well depends largely on the individual's more or less sustained cooperation. It would seem, therefore, that the emphasis of control measures should be laid more on prevention. The Negro cannot be depended on to take up that phase of the problem. Reliance must be placed on public health means: official and nonofficial organizations, to go out and find active tuberculosis and to eliminate it as a source of infection. Infected children must be helped either with BCG if that proves satisfactory or with other means.

DR. MARIE PICHET LIVINGSTON, New York: I cannot refrain from adding a word about a measure that I consider preventive. In New York there is a contraceptive clinic for Negroes. I believe it is the first one in the country. A branch is located in Harlem which is the district in New York having the greatest death rate from tuberculosis. It was felt that in this neighborhood particularly where the infant mortality was so great a proper response from the Negro population was not being obtained. After three years' existence it was found that more white patients than Negroes were coming to the Negro clinic so last month the headquarters were

moved into the New York Urban League Building, which is a settlement house for the advancement of everything relating to Negroes, and the number of Negroes coming to the clinic for such advice has increased. I feel that this is a very necessary public health measure and I believe it is an adjunct to attacking the problem preventing tuberculosis. New York City has a large Negro problem and we are just as concerned there as people are in the South. The various social agencies refer tuberculous or pretuberculous women to our clinic for contraceptive advice as a preventive measure.

DR. EMIL BOGEN, Olive View, Calif.: I have been interested in trying to find why certain races show a higher mortality rate from tuberculosis. I have tried to find out by animal experimentation what will make one strain or family of animals more susceptible to tuberculosis than another. Larger doses of infection will with fair uniformity produce larger amounts of tuberculosis. I have not been able to find any difference by environmental means affecting the development of tuberculosis in animals after they have been infected. I think one has to distinguish, when speaking of environment, between those environmental factors affecting exposure to infection, or the number of germs that the individual receives, and those factors affecting his resistance to the infection. Certainly it can be shown, both by animal experimentation and by epidemiologic studies, that tuberculosis depends greatly on the number of organisms. Cases can be traced from one active case to another. It is much more difficult to show that such things as income or housing conditions or food really affect the development of tuberculosis in different peoples. It is also known that, after tuberculosis develops, the course of the disease depends very much on the treatment and that at the institution with which I am connected we find that the Negroes or those of any other race coming in with early tuberculosis have a very good chance of recovering. I feel that one of the greatest factors responsible for the different mortality rates in different races is the readiness with which the different people come for early treatment.

PROGRESSIVE PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

RESULTS OF TREATMENT WITH EPINEPHRINE AND PILOCARPINE

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For nearly a century this poorly understood symptom complex has been recognized and has presented a constant challenge to the medical profession. The various therapeutic procedures recommended, including exercises, physical therapy, dietary regulation, calcium and glandular preparations, have all failed to have any appreciable influence in improving the condition or in stopping the gradual relentless progression to complete helplessness.

In 1930, Kure and Okinaka¹ reported improvement in nine cases following the daily administration of epinephrine and pilocarpine. In 1931, I² reported improvement in sixteen cases in which this treatment was used. This paper is based on the present results in these and twenty-two additional cases treated over the period of the last three years at the Shriners Hospital for Crippled Children at Springfield, Mass.

In addition to my own cases I have collected results in fifty-six cases in which this treatment was given

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¹ Kure K. and Okinaka S. Behandlung der Dystrophie musculorum progressiva durch Verabreichung von Adrenalin und Pilocarpin. Klin. Wochenschr. 11(8) (June 21) 1930.
² Hough G. Den Jr. Progressive pseudohypertrophic muscular dystrophy. J. Surg. 17: 525 (Oct.) 1931.

elsewhere, thirty-one being from the literature³ and twenty-five from personal communications. According to the various observers, improvement has been noted in thirty-nine, fifteen have been unchanged, while in two the condition has become worse under treatment.

I have used epinephrine-pilocarpine in thirty-eight cases in all stages of the disease, the number of injections varying from twenty-three to over 600. Administration has been by daily hypodermic injections of 0.3 cc of a sterile solution consisting of one part of 1 per cent solution of pilocarpine hydrochloride and two parts of 0.1 per cent (1:1000) epinephrine hydrochloride. The drugs have no incompatibility and may be dispensed together in a rubber capped vaccine bottle and the daily dose removed under aseptic precautions.

Every patient has shown some clinical improvement while taking the treatment. This improvement has been both subjective and objective. It has varied in amount from a slight sense of increased strength with a greater desire to attempt functional activity to apparently complete recovery. In most cases some definite functional improvement could be demonstrated. The improvement was greatest in the least advanced cases.

There have been no additional therapeutic procedures other than general hygienic care, ordinary diet, and normal activity to the limit of the individual capacity. In particular, glyco Coll has not been used in spite of some encouraging reports, because of my desire to evaluate as accurately as possible the influence of pilocarpine-epinephrine.

It is obviously impossible to eliminate the psychologic factor of a definite course of treatment, particularly in cases in which previously repeatedly hopeless prognoses have been given. The hopefulness and optimistic attitude of the parents very probably has been reflected in the mental condition of the child, and due allowance for this factor must be made. This is particularly true when the improvement has been primarily subjective or when it has been relatively slight.

Fifteen cases have been observed for from one to two years since the last treatment was given, from sixty-nine to 240 injections having been given. In only one case is there any evidence that the progress of the disease has been stopped. The patient, a 13 year old boy with symptoms for eleven years had been confined to a wheel chair for three years. He has apparently not changed during the past year following 240 treatments. Every other case has shown definite progression of the disease, in spite of 200 treatments in one case, 180 in another, and from seventy to ninety in the remainder.

Nineteen patients are still receiving treatment, nine of whom have been under treatment too short a time to present evidence on the question of progress, having received less than 150 injections. Ten patients have received from 150 to 600 injections. Four of these children have shown some loss although still as well as or better than, when the treatment was started. The other six patients have maintained their improvement.

From this evidence I have arrived at the definite conclusion that, although epinephrine-pilocarpine is helpful and of symptomatic benefit, it is not curative.

The treatment must be continued indefinitely and even in spite of continued treatment the condition may progress.

I have attempted to determine the influence of the treatment on the duration of life by an analysis of fifteen fatal cases, ten from my own cases and five from the literature.⁴ As shown in the accompanying table, the four treated cases show a somewhat greater variation of age at time of death, and the average age is about a half year older than in the treated cases. While this suggests a possible lengthening of life, there is not sufficient difference to be of significance.

The remaining problem to be answered is whether this treatment prolongs the period of functional activity. An analysis of ninety-five cases, eighteen of which have been taken from the literature, shows that symptoms are first observed before the age of 2 years in about 12.5 per cent of the cases, from 2 to 4 in 50 per cent and from 5 to 7 in 30 per cent. In only an occasional case were symptoms first noted after 7 years.

Fatal Cases

	Name	Age	Cause of Death	Duration of Disease	Years Unable to Walk
Treated					
D. R.		9	Acidosis	4	2
Case 5		16	Acute appendicitis	11	5
Case 10		16	Pneumonia	14	7
Case 1		20	Pneumonia	12	7
Average		15.3		10.3	5.3
Untreated					
W. D. (Voshell)		12	Bronchial disease		4
Bishop (1) (Voshell)		12	Whooping cough		4
Bishop (2) (Voshell)		12	Stomach trouble		4
Case 2		1	Pneumonia	10	3
Case 13		1	Pneumonia	8	1
J. D. (Voshell)		1	Unknown		
Case 6		16	Unknown	10	3
Case 16		16	Influenza and tuberculosis	15	6
W. F. (Voshell)		17	Unknown		
Case 10		17	Gastro enteritis	15	7
Case 17		17	Pneumonia	16	8
Average		14.7		12.3	4.5

In a few cases the power of locomotion is lost as early as two years after onset, and 35 per cent of the children are unable to walk after 5 years. Most of the remainder (62 per cent) lose their ability to get about between the sixth and the ninth year of the disease. In only an occasional case is gait preserved beyond nine years. Expressed in terms of the child's age, approximately 50 per cent stop walking at the age of 8 to 9 years and 40 per cent at from 10 to 12 years.

The treatment has been carried out in twelve ambulatory and twenty-four nonambulatory cases. In the latter group in spite of the fact that in every case some improvement was observed in no case was gait reestablished. Two of the twelve ambulatory patients have since lost the power to walk at an age of 11 years, after seven and eight years of the disease. Both of these children show a possibly suggestive but probably insignificant increase over the average. The patients who are still ambulatory vary in age from 6 to 13 and average 9.2 years which is slightly beyond the age at which most of the children lose their power to walk.

CONCLUSIONS

I feel justified in making the following conclusions regarding the use of epinephrine and pilocarpine in progressive pseudohypertrophic muscular dystrophy.

1 Daily doses of 0.1 cc of 1 per cent solution of pilocarpine and 0.2 cc of 0.1 per cent epinephrine are of symptomatic benefit in practically all cases.

³ Kure and Okinaka (footnote 1). Voshell, A. F. Progressive Pseudohypertrophic Muscular Dystrophy, South M. J. 26: 156 (Feb.) 1933. Goralewski, G. and Engel, E. Zur Behandlung der Dystrophia musculorum progressiva mit Adrenalin und Pilocarpin. Deutsche med. Wchnschr. 58: 1169-1170 (July 22) 1932. Leiter, A. Die Adrenalinbehandlung bei progressiver Muskeldystrophie. Monatschr. f. Psychiat. u. Neurol. 81: 289 (Jan.) 1932.

⁴ Voshell (footnote 3).

2 In some of the cases the improvement may be wholly or in part due to the psychologic effect of renewed hope based on a definite course of treatment

3 This improvement has never been sufficient to reestablish gait after the power to walk was lost, but function when present may be markedly improved

4 There is no evidence that this treatment is curative or that it alters the mortality or increases the length of life

5 If treatment is stopped for a period of from one to two years, the gradual increase of disability is again noted

6 Progression may occur while under treatment but apparently the rate of progress is definitely slower than it otherwise would be

7 It is possible that alteration of dosage or the combined use of other methods of therapy may give better results

8 Finally, in spite of the fact that these drugs do not cure the disease, that their benefit is not permanent or as marked as the early reports may have led one to hope, epinephrine-pilocarpine treatment is of sufficient value to justify its continued use in this disease. There is no more excuse for withholding it than there is for not giving insulin in severe diabetes or digitalis to an individual with irreparable cardiac damage. Even these highly valuable therapeutic agents are not curative

146 Chestnut Street

ABSTRACT OF DISCUSSION

DR ARTHUR STEINDLER, Iowa City. The interpretation of this condition from the pathologic and etiologic points of view will have to abide its proper time. I believe it was Duchenne de Boulogne who pointed out that this condition is a disease of the muscles and not of the central nervous system and that consequently all methods of treatment that were directed to the central nervous system would come to naught. So when in 1929 Kure and Okinaka came out with their pilocarpine-epinephrine method there was some raising of eyebrows. They were able, however, to present a series of twelve cases, six of which improved and two were cured. Dr Hough today presents a series of thirty-eight cases in almost all of which at least temporary improvement was noted. The question of glycine or glycozell treatment ought to be given consideration. When Powers and Techner brought out their chemical investigation on this subject, they pointed out that the creatine was utilized to the degree of 70 to 80 per cent. Others Gibson and Martin and Brand demonstrated the synthetic power of the organism to utilize creatine. Gibson and Martin accomplished this by feeding gelatin and Brand by feeding glycine, or glycozell. Clinical reports on the use of glycine or glycozell above all the reports of Milhorat and his co-workers describe a certain amount of temporary improvement. The basic idea being that the glycine furnishes the food for the muscles which would otherwise be lost by excessive excretion of creatine it is believed that the treatment should be employed only in those cases in which the initial excess of creatine excretion in the urine and in the muscle tissue disappears after one week of creatine dosage. Voshell reports fourteen cases, nine were improved and five were not improved. His idea was to combine the pilocarpine-epinephrine with the glycozell treatment assuming that the glycozell would furnish the food for muscles that would otherwise be lost whereas the epinephrine would provide the stimulation of the autonomic system necessary for the control of creatine metabolism. It is obvious that those cases in which creatine metabolism has been hopelessly upset and is continually affected by an excessive creatine output would not be suitable. I have recently reviewed my own cases—eighty-one in number. Not in a single case was I able to effect an arrest of the condition although all possible methods have been used including epinephrine and glycine.

DR HENRY B. THOMAS, Chicago. At the University of Illinois College of Medicine cases of dystrophy have been admitted for study since 1931. We have in only a few cases, used epinephrine and anterior pituitary, with no noted improvement. We have used glycine with no clinical improvement, also creatine. I believe that any therapy after function is lost will be of no avail. The etiology of the disease must be sought in order that the loss of muscular function may be prevented. We are anxious therefore to experiment on the metabolism of these patients and have our plans laid to proceed along this line. In most cases the diagnosis, as Dr Hough says, is easy. However caution is urged in order to prevent mistakes in diagnosis in obscure cases. We have one case in which there is a coexistence of infantile and muscular dystrophy. We have also one case which we have been calling amyotonia for some time. Closer examination proved it to be an instance of muscular dystrophy of the atrophic form. When 8 months old, the patient contracted scarlet fever. After that his muscles grew gradually weaker and he became more deformed. This case and the one I mentioned before, show a connection with an acute infectious disease. Out of our 634 hospitalized orthopedic cases since 1931 we have included and studied eighteen instances of dystrophy or about 2.75 per cent of our admissions. The pseudohypertrophic form of the disease was presented by 38% per cent, all boys. The ages ranged from 3 to 14. There were thirteen boys and five girls. That is a proportion of 2.6 to 1. Two are brother and sister and the third a maternal cousin. One patient has a sister with a similar condition. Thus in four instances the disturbance was of the familial type. In four of the patients an intercurrent disease, such as pneumonia or whooping cough, proved to aggravate the already existent muscular dystrophy and two thirds per cent have never walked. Fifty per cent walked normally until the age of 3 to 20 years and then motion became gradually impaired. At the present time 22% per cent of them are unable to walk, the remainder have difficulty in walking, especially in climbing up and down stairs. Weakness of the legs since birth was present in 33% per cent. The mental development of these patients has been normal. Well pronounced pseudocontractures were found in 44% per cent. The muscles of the thigh, knee and ankle were usually involved.

DR PHILIP LEWIN, Chicago. I want to express my appreciation of the work that Dr Hough has done on this subject. I began using epinephrine in 1920. In order not to have to make punctures three times a day I administered hypodermic tablets of 1/200 grain dissolved under the tongue which seemed to me a better way than ingestion by mouth, which proved to be worthless. There seems to be an analogy in this condition such as exists between the situations of a coal bin, a furnace and a fireman. The fuel may be deficient in quality, quantity or availability. The furnace may be inefficient. The fireman may not have proper ability, strength or industry. The transportation may be wrong so far as speed, direct route, obtainability or detours are concerned. The energy may be at fault so far as quantity, availability and usability are concerned. So far as muscles are concerned the three factors are the efficiency, the ability to store up fuel and the ability to transform the fuel.

When Kure and Okinaka in 1930 reported two cures and seven improved cases I thought that it was an addition to the armamentarium but I don't think that Dr Hough's series, Dr Voshell's series or any other series I have studied proves that point. There is undoubtedly something in it. The question seems to revolve about the metabolism. Until the metabolism is thoroughly understood, my method is going to be a hit-or-miss method. There are other forms of treatment such as glycine, pituitary extract, diet combinations of the Japanese and glycine treatments and blood transfusions. I should like to try the method of giving fetal muscle extract. Milhorat, Techner and Thomas are using from 5 to 15 Gm of glycine a day increasing the output of creatine but it must be continued indefinitely. I think the word improved is misleading because any change from a poor routine may be beneficial. The children that are seen for the first time have been under a poor routine and any change may help them. It must be considered that the course of the disease may have remissions and the cure may be attributed to the therapy.

DR. GARRETT N. HOUGH, JR., Springfield, Mass. Of course, this is simply one phase of a complicated subject. I agree that there is a tremendous amount of information to be learned in order to come anywhere near understanding this disease, and I think that eventually this condition will be subdivided into types and groups, probably as distinct entities. What is now classified as progressive pseudohypertrophic muscular dystrophy may represent a number of different conditions. I am convinced that epinephrine and procaine are beneficial although not curative. Dr. Lewin criticizes the use of the word 'improved.' In many of the cases perhaps the change has not been sufficient to warrant the use of this term but my most satisfactory patient, after being under observation for five years last summer passed his test as a life saver and won a quarter-mile swimming race. If after five years of disease, he was able to do that I think he was improved. He is classified however as having shown progress because for three years he represented a complete cure walking with normal gait and taking part in all normal activities. Now he has a definite limp, walking with a side-to-side sway

Clinical Notes, Suggestions and New Instruments

CARCINOMA OF BARTHOLIN'S GLAND

REPORT OF TWO CASES

HYMAN STRAUSS, M.D., BROOKLYN

Primary carcinoma of Bartholin's gland is rare. A review of the world's literature by Harer in 1933 revealed only thirty cases recorded, not all of which in his opinion were authenticated. Nothing definite is known about the etiology. Falls says that chronic inflammation has been present in a considerable number of the cases reported. In only one case was there a definite history of gonorrhea and syphilis. Bilateral inflammation of the gland was described in only one case. The lesion has been found in unmarried women but not in virgins. The youngest patient was 28 and the oldest 91 while the average age was over 50 years.

Diagnosis is usually made postoperatively. It is most frequently confused when associated with chronic infection with abscess formation. Syphilis, contrary to gonorrhea, rarely attacks this gland. Chancroid and granuloma inguinale affecting Bartholin's gland have not been reported. Primary tuberculosis is rare there being only three cases reported. Viet found reports of three cases of sarcoma of this gland. The prognosis, according to Kelly, is usually fatal because of late discovery or incomplete operation. In the cases reported one patient survived for three and another for six years free from recurrence. Metastasis occurs in the inguinal lymph glands quite early.

The treatment is primarily surgical. However, at Radiumhemmet, in Stockholm electrocoagulation of the tumor and radiotherapy have been used with considerable success. Howard Kelly advises endothermic vulvectomy and electrocoagulation of the glands *in situ*. Traussig, who has made a study over a period of years, insists that radical vulvectomy and a complete bilateral Basset operation is the only procedure that has stood the test of time. If the lesion is early or the risk slight, he performs this operation in one stage; otherwise it is done in two stages with an interval of a few weeks. He has not been satisfied merely with excision of the vulva and irradiation of the regional lymph nodes.

REPORT OF CASES

CASE 1—Mrs. C. M., aged 61, white, an American, was admitted to the gynecologic clinic of the Brooklyn Cancer Institute Jan. 15, 1932, with swelling of the right side of the vulva, which had been noticed for a few months. At first the swelling was small, firm and painless. In spite of hot compresses and other remedies applied to the lesion, it increased

in size. She was referred to the clinic by her physician. There was nothing of interest in her previous history. She was a tertigravida and a tertipara. The menopause occurred at 34. During the year before admittance, the patient had frequent spells of hemoptysis.

On admittance the patient was emaciated, weighing 74 pounds (33.6 kg.). Examination of the genitalia showed a mass measuring 8 by 4 by 3 cm., involving the right labium majus and almost occluding the introitus. The tumefaction was firm, smooth, not tender and with no area of fluctuation. The mass was not fixed to the underlying tissues but was adherent to the overlying skin, which was reddened. The inguinal nodes were not appreciably enlarged. Otherwise the genital organs presented no abnormalities. The Wassermann test was negative and the sputum was repeatedly negative for tubercle bacilli.

Examination of the blood revealed red blood corpuscles, 3,680,000 with no early forms, hemoglobin 90 per cent, white blood corpuscles, 18,200, polymorphonuclears 84 per cent, lymphocytes, 11 per cent, monocytes, 4 per cent, eosinophils 1 per cent.

A roentgenogram of the chest showed no cavities or consolidation but veiling over both apical fields, an evidence of a thickened pleura. The lung root densities were not abnormal in size. There was some calcium deposit.

A diagnosis of carcinoma of Bartholin's gland was made and operation was performed January 28. The involved area was completely excised. The pathologic diagnosis was anaplastic carcinoma of Bartholin's gland.

Interstitial radium therapy was administered to the right labium at the site of the incision, March 9. Two tubes of 9 mc. each of radon filtered through 0.5 mm. of platinum were inserted and allowed to remain in place until a dose of 1,200 millicurie hours was delivered. In May, a course of high voltage roentgen therapy was administered to the pelvis and perineum, five portals being used. A total of 6,450 roentgens was administered over a period of twenty-one days.

The patient was seen in the follow-up clinic from time to time. In January, 1933, a small erosion was noted at the site of the operative scar. Further radiation was prescribed. This was given by applying two gold filtered radon seeds of 1 mc. content each, delivering a total dosage of 266 mc. hours. Since then the lesion has remained completely healed.

CASE 2—Mrs. M. L., aged 48, white, American, admitted Feb. 16, 1933, to the gynecologic service of Kings County Hospital, service of Dr. H. M. Mills, complained of a lump in the vagina and a vaginal discharge. Two years prior to admission, the patient noted a small mass slowly increasing in size. Four months before admission, the mass grew rapidly and a whitish to bloody vaginal discharge occurred. One month before admission, bleeding from the lesion and vaginal pain radiating to the right thigh set in.

The pain was sharp and stabbing. She lost 5 pounds (2.3 kg.) in two months. She was a primigravida in 1909 and there was a miscarriage, after which complications developed necessitating a hysterectomy. In 1929 the patient had a cholecystectomy, which was later followed by a cholecystectomy.

The patient was obese and did not appear acutely ill. Rectal examination was negative. The right labium majus was enlarged by a mass about the size of a walnut which protruded over the introitus and practically occluded the vagina but did not extend to the inguinal or perianal areas. It was irregular in outline, much indurated and exquisitely tender. The overlying skin was adherent, swollen, reddened, edematous and beginning to ulcerate. The mass was slightly fixed to the underlying tissues. There was an ulcerated area about 25 mm. in diameter at the exit of the duct, which extended three-fourths inch along the vaginal wall. This area bled readily. The vagina otherwise appeared normal. The uterus presented no pathologic changes, the adnexa were not palpable. A brownish discharge was present. The inguinal lymph glands were not palpable. Roentgen examination of the chest revealed no pathologic changes.

The blood Wassermann reaction was negative. Chemical examination of the blood revealed sugar, 114 mg. per hundred cubic centimeters; creatinine, 1.25; urea, 35. The blood count revealed red blood corpuscles, 4,192,000; no early forms; hemoglobin, 85 per cent; white blood corpuscles, 5,200; poly-

morphonuclears, 61 per cent, lymphocytes, 36 per cent, large mononuclears, 3 per cent

Examination of a catheterized specimen of urine revealed a specific gravity of 1.021, acid, no sugar, a trace of albumin, many fine granular casts, many leukocytes, an occasional red blood corpuscle

A diagnosis of carcinoma of Bartholin's gland having been made, a radical vulvectomy was done, February 24. The wound healed slowly because of secondary infection. Six weeks after the vulval wound had healed, a bilateral Bassett dissection of the inguinal and femoral glands was done. The pathologic diagnosis made by Dr. Hala was squamous cell carcinoma, but there was no evidence of metastasis in the lymph glands removed. The convalescence was uneventful. The patient when last seen, June 30, 1933, was free from symptoms and there was no evidence of recurrence

755 Ocean Avenue

A PATIENT SENSITIZED TO AN ART GUM ERASER

JUNE ADKINSON, A.M. AND I. CHANDLER WALKER, M.D. BOSTON

Although this case is not of widespread interest to the community at large, it does concern those who use extensively art gum erasers, such as artists, art students, architects and masseurs

A woman, aged 25, normal with the exception of a defect of vision which is corrected by wearing glasses, daily used a binocular microscope for from one to five hours a day without eyestrain. Recently she began to draw from the microscopic field for several hours at night and often for all day on Sunday.

After a short time the patient noticed a persistent itching of the eyes and edema of the eyelids, which could be relieved temporarily by rubbing the eyes with her hands. Later on, even when she did not touch the drawing materials for several days, the swelling and redness of the eyelids would persist and there was a marked increase of the symptoms whenever the drawing was resumed. Still later there was constant redness, rawness and itching at the corners of the mouth and the usual symptoms of a slight cold. A marked rhinitis and a sensation of soreness in the throat occurred whenever the patient was exposed to the drawing materials. This condition continued for seven weeks.

Fearing that the additional strain on the eyes from the prolonged periods of drawing was injuring her sight, the patient consulted an ophthalmologist, who found that her vision was unchanged, in spite of the excessive use of the eyes. From the history and the appearance of the eyelids and the corners of the mouth, the ophthalmologist felt that the condition was allergic in nature and was caused by some substance to which she was only recently exposed. Skin tests were advised with toilet preparations, drawing materials and other substances such as clothing and gloves.

Since her toilet preparations were of the same brand that she had used for years and since the only change in her environment and occupation was the drawing and furthermore because the symptoms which started soon after she began to draw, were aggravated whenever she used the drawing materials for a long time and were relieved when she was not exposed to them, the patient thought that the paper, the ordinary rubber eraser, the soft viscous art gum eraser or a cement used for mounting pictures was probably the offending factor.

The drawing materials were avoided for several days until the eyelids were only a little swollen and there was very slight itching. When the patient was nearly normal again skin tests by the scratch method were made on the left forearm with toilet preparations, with rubber eraser, soft art gum eraser, picture mounting cement and drawing paper. A very small amount or piece of each substance was placed on a slight cut made with a sharp scalpel penetrating the cuticle but not drawing blood. A drop of tenth normal sodium hydroxide was placed on each scratch to dissolve the fragment of material and allowed to soak for fifteen minutes, after which the scratches were gently wiped off and the reactions were compared with a control scratch on which only a drop of tenth normal sodium hydroxide had been placed. The tests with the toilet prepara-

tions were entirely negative, the tests with the rubber eraser and the drawing paper were slightly red, but the test with the art gum eraser produced an urticarial wheal 0.75 cm. in diameter surrounded by a flushed area about 2 cm. in diameter.

Although the eyelids were only slightly itching and swollen before the skin tests were made, on the following morning and apparently as a result of the skin tests, both eyelids were badly swollen and the itching was severe. The swelling disappeared rapidly and the patient was fairly comfortable for several days or until the following Sunday, when she spent several hours drawing with the same materials. After this exposure the swelling and itching of the eyes reappeared and continued for about twenty-four hours. The corners of the mouth were not affected after the tests or after this prolonged exposure to the drawing materials, probably because the patient, who had had the habit of holding her pencil contaminated of course with eraser and paper dust, in her mouth while erasing was very careful to avoid touching her face with her hands and the drawing materials. During the five days of avoidance of drawing, the eyelids became almost normal.

On the fifth day after the last exposure, a more extensive series of scratch tests was made on the other forearm with foods, pollens, animal hairs and feathers, all of which gave entirely negative reactions. In addition, retests were made with solutions of the drawing materials. The solution of rubber eraser gave a negative reaction, the solutions of cement and of drawing paper gave a slight erythema, but the solution of art gum eraser gave a definite itching raised area about 1 cm. in diameter surrounded by a flush about 3 cm. in diameter.

About two hours after the second series of tests was made, the left cheek began to redden and burn, and an hour later, about 5 o'clock, a definite urticarial wheal appeared on the left cheek. By 8 o'clock there was itching and marked swelling of both eyelids as severe as the symptoms produced by several hours' use of the drawing materials to which the patient had not been exposed for five days. Application of fresh menthol ointment gave sufficient relief for her to go to sleep normally.

About 2 o'clock in the morning the patient was awakened by a very severe burning sensation in both eyes. The eyelids were so edematous that the left eye could hardly be forced open. The lips were stiff, swollen, protruding and hot, and there was a severe rhinitis. The throat was not affected, but the patient was frightened and in mental distress. The application of boric acid solution gave no relief, but acetylsalicylic acid tablets and the application of fresh menthol ointment relieved the symptoms in a short time. On the following morning, although the edema was somewhat reduced and the itching had subsided, the eyelids were still badly swollen and two or three hive-like areas appeared on the cheek and neck. After the application of menthol ointment at 11 o'clock, the facial swelling receded rapidly.

Examination of the test area on the arm showed that all scratches were normal where the tests had been negative on the previous day. The scratches to which the solutions or picture mounting cement and rubber eraser had been applied were negative and the scratch on which a solution of drawing paper was tested showed a slight redness, but the scratch on which the art gum eraser solution had been placed showed redness and erosion about 0.75 cm. in diameter.

In order that the drawing, which was an unaccustomed occupation, might be finished a plan was made for the patient to protect herself from exposure to the dust of art gum eraser and drawing paper dust by smearing her face heavily with ointment of rose water, by wearing a damp gauze mask over her mouth and nose and by protecting her eyes with glasses. With these precautions the patient was able to continue her drawing for two and one-half hours on one day, five hours on another and longer periods with no return of the itching and edema. Any use of the art gum for erasing without the facial mask caused a beginning of the itching and swelling of the eyelids, but erasing done with the ordinary rubber eraser produced no discomfort even without the mask.

A slight return of the irritation of the eyelids was noticed whenever the patient sat in the room where the drawings had been made. After a thorough dusting of the furniture and of the work table with a damp cloth and beating of the rug out door the patient experienced no further trouble in the room.

Still later, when the patient visited the store where the art gum was purchased, she stood near a counter on which were exposed brick-shaped large pieces of the art gum material to be used on their hands by masseurs in rubbing patients for weight reduction. The odor or dust of the material was so abundant that the patient felt an immediate effect in her eyes and throat and she retired for relief to the sidewalk until her purchases were ready.

721 Huntington Avenue

Council on Pharmacy and Chemistry

PYRIDIUM OMITTED FROM N N R

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
PAUL NICHOLAS LEECH, Secretary

Pyridium¹ is the monohydrochloride of an azo dye of the pyridine series, phenylazo-*o*-*a*-diamino pyridine. It is marketed by Merck & Co. Inc. in the form of a 1 per cent aqueous solution, a 10 per cent ointment, and tablets containing 0.1 Gm. The firm presented the product for consideration of the Council in 1928, proposing it for use mainly as a urinary antiseptic. The A. M. A. Chemical Laboratory examined the product and evaluated suitable standards of stability and purity, as well as corroborating the claimed composition.²

The firm's original presentation of Pyridium was accompanied by four circulars containing claims and excerpts from a pamphlet by Iwan I. Ostromislensky, entitled "The Scientific Basis of Chemotherapy." Ostromislensky, who originated Pyridium in 1912, appears to have used the drug first in Russia in 1917 and brought it with him to this country for clinical trials and manufacture about 1924. The base apparently was first described by Tschitchibabin and Zerde. Most of Ostromislensky's book on chemotherapy is concerned with an account of Pyridium. This evidence was judged to be unconvincing. The Council declared Pyridium unacceptable in July 1928, and adopted for publication a statement of its consideration. A request by Merck & Co., Inc., for postponement of publication of this report was granted.

Additional evidence was presented by the firm in April, 1929, and further postponement granted. A recommendation to accept Pyridium in December, 1929, was not adopted because it was desired to obtain opinions on the evidence from critical genito-urinary surgeons. In March, 1930, opinions on the value of the evidence for Pyridium were expressed for the benefit of the Council by two prominent genito-urinary surgeons, consultants of the Council, who considered the evidence submitted to be insufficient to support the claims but did not advise rejection of the product. Further postponement of action by the Council was decided on.

While these negotiations with the Council were being carried on by Merck and Co., the Mallinckrodt Chemical Works began to push the sale of Mallophone and E. R. Squibb and Sons began to exploit Serenum, Mallophone (for which the firm has indicated willingness to substitute the nonproprietary name Azophene) is identical with Pyridium, as shown by an investigation in the A. M. A. Chemical Laboratory, while Serenum is an azo dye of a similar type. The firms of Mallinckrodt and Squibb did not submit their products to the Council at that time, and Merck and Co. appeared to be suffering a loss through its attempt to cooperate with the Council. A recommendation that Pyridium be accepted for one year was adopted in April 1930. The referee stated in the discussion of this action that both genito-urinary consultants favored acceptance. After discussion of the evidence the Council announced acceptance of the product.³

Pyridium was retained in New and Nonofficial Remedies during 1931. On the basis of new evidence presented by the firm, the Council's referee, in May of that year, obtained an opinion from one of the consultants that Pyridium still gave promise of therapeutic usefulness, but the other consultant was not convinced by the new evidence. This evidence was chiefly voluminous unpublished reports submitted by the firm. The Council voted to accept Pyridium for another one year period, although at the time a member of the Council stated that he feared that in a few years pyridium will join the ranks of discarded urinary antiseptics.

A new referee was then assigned the task of reviewing the old and new evidence on Pyridium. He recommended acceptance of Pyridium under severely limited claims, and in November, 1931, the Council adopted this recommendation. The conditions specified for this acceptance considerably restricted the claims for Pyridium. The restrictions were, in brief, that the firm should not emphasize the tissue-penetrating property of Pyridium, should limit claims for efficacy of the drug in the treatment of prostatitis and pyelitis, should omit all claims that the drug protects the tissue cells against bacterial toxins and stimulates body defense regeneration and repair of tissues, and should refer explicitly to possible gastro-intestinal disturbances sometimes produced by the drug. The firm agreed to abide by these requirements and in later correspondence with the referee, through the Secretary, agreed to drop its claim that Pyridium taken by mouth gives a bactericidal power to the urine. An antibacterial or bacteriostatic action of urine containing excreted Pyridium seemed to have been established according to the evidence reviewed at that time.

During 1929 bacteriologic reports had been received from the Lederle Laboratories, the Pease Laboratories, the Gradwohl Laboratories and Professor Prescott of the Massachusetts Institute of Technology. All of these indicated that Pyridium in various solutions had bactericidal and bacteriostatic effects on *B. coli* and *Staphylococcus aureus*. They favorably impressed the previous referee. They are in harmony with other similar laboratory examinations considered by the Council. They lacked data on the antiseptic property of urine containing excreted Pyridium and clinical reports also were lacking.

Finally, the firm has stated that it has numerous letters from physicians testifying to the efficiency of Pyridium. These have not been submitted. They could not be considered as having any definite value as evidence. The firm sent a reference to a report on Pyridium by Szancer in the *Pharmazeutische Nachrichten* Warschau 1930. Przemysl. This journal not being available to the referee he has not examined the report. Other expressions of opinion unfavorable to Pyridium have been made by Dr. Keyes⁴ and in the Queries and Minor Notes section of THE JOURNAL.⁵

In July, 1932 Merck & Co. Inc., submitted the text of a proposed advertisement of Pyridium as a "first aid" antiseptic, indicating its intention to exploit the product to the public as an "effective" antiseptic for local use on cuts, wounds and abrasions. The referee replied through the Secretary that he did not have sufficient evidence to justify acceptance of Pyridium for these purposes and asked the firm to submit the evidence before proceeding on this plan of exploitation. The firm decided to abandon this plan.

A review of the firm's advertising convinced the Council's referee that it has been restrained within the specifications of the Council as far as the use of words is concerned. The referee believes that Merck & Co. Inc., has made a faithful and expensive effort to comply with the regulations of the Council.

The Council's referee presented the following summary and the conclusions which he has drawn from his consideration of the reports on Pyridium. An annotated list of the papers and reports studied by the referee (except where otherwise noted) appears as the first addendum to this report.

¹ Pyridium in aqueous solution has bactericidal and bacteriostatic properties. These effects are less against *B. coli* than on *Staphylococcus aureus*. These effects are reduced by urine and liquids containing complex organic substances.

¹ Azophene (formerly Mallophone) marketed by the Mallinckrodt Chemical Works is identical with Pyridium. The Council's report rejecting Azophene appears in this issue of THE JOURNAL. A somewhat similar product, Niazol, also recommended for use as a urinary antiseptic is marketed by the Schering Corporation. The Council's report rejecting this product appeared in THE JOURNAL June 3, 1933, p. 1767. Serenum does not stand accepted.

² Collins G. W. Chemical Examination of Pyridium and Mallophone. J. Am. Pharm. A. 20: 455, 1931.

³ Pyridium J. A. M. A. 95: 34 (July 5) 1930.

⁴ Keyes. Urology 1928, p. 111.

⁵ Pyelitis After Otitis Media. J. A. M. A. 99: 584 (Aug. 13) 1932.

2 Urine secreted after oral administration of Pyridium has no bactericidal effect on *B. coli* and a negligible bacteriostatic action. Occasionally urine containing excreted Pyridium may be bactericidal and bacteriostatic against *Staphylococcus aureus*. The lack of these effects may be due to inability practically to obtain a sufficiently high concentration of the substance in the secreted urine or to a change in the substance in its passage through the body. Since Pyridium does not cause the secretion of an antiseptic urine it cannot be sustained as a urinary antiseptic.

3 Numerous clinical reports on Pyridium therapy in infections of the urinary tract are open to doubt and do not present convincing evidence. Evidence denying its efficacy is accumulating in published reports and in less formal expressions of competent urologists. During eight years of trial Pyridium has not become established as a useful remedy.

4 The earlier claims that the drug detoxified bacterial poisons aided the defenses of the body and stimulated tissue repair have not been supported and have been withdrawn.

5 No convincing evidence has been presented that Pyridium is a useful antiseptic for application to infected wounds either in treatment or as a prophylactic.

6 Penetration of tissues especially mucous membranes has been demonstrated. But there is no experimental or clinical proof that the amount and character of the compound in the tissues and mucous membranes are such as to kill bacteria or hinder their growth.

The Council's referee recommended, therefore, that the acceptance of Pyridium be revoked at once and that the product be declared unacceptable for continued inclusion in New and Non-official Remedies as a local, general or urinary antiseptic because claims for its therapeutic usefulness are not warranted by the accumulated evidence. The Council adopted the referee's report and authorized publication of this statement of the Council's consideration of Pyridium.

When the foregoing report was submitted to Merck & Co., Inc., the firm replied in a carefully prepared and well documented brief which required further consideration by the Council. The thesis of the firm's brief was that Pyridium has become established as a useful remedy. To uphold this, the firm offered (a) informal reports from physicians including "approximately 30,000 additional reports as well as a number of special reports of both controlled and uncontrolled clinical experience" received by the firm since December, 1928, and photostat copies of forty one letters from "leading authorities in the United States giving expression to the fact that they find Pyridium useful in their particular fields." The firm offered to tabulate the reports referred to but the Council considered the submitting of such a tabulation unnecessary, since they no doubt provide a type of evidence which has been abundantly supplied in connection with almost every sort of drug and has not been a dependable guide to wise and fair action on the part of the Council. As for the forty one letters, they are, properly, brief statements of opinion in reply to an inquiry from the firm. All except two are favorable to Pyridium. These letters were not intended to supply evidence in the sense of detailed observation.

The firm in addition presented (b) new evidence in the form of published reports. The Council's referee analyzed these as indicated in the second section of the addenda to this statement.

In its brief the firm pointed out technical faults and omissions of procedure in some of the laboratory investigations which had been cited in the former report as affording evidence unfavorable to Pyridium. The Council's referee was aware of these deficiencies when he reviewed the papers in question. It is correct as pointed out by the firm that the single 0.4 Gm dose administered by Davis and Sharpe⁶ is less than the repeated 0.6 Gm dose recommended by the firm. In the opinion of the Council's referee however the experimental evidence prevented justified conclusions drawn from the work.

The firm presented a program of further research on Pyridium preceding it with the statement. From our previous correspondence with the Council we recognized the need for additional research on Pyridium. The program of research outlined by the firm appeared to the Council's referee to be comprehensive and admirable. The referee had no other suggestion to offer on this program. It is obvious that the results of the investigations will be awaited with interest and may afford a basis for renewed consideration of the drug. The present report of the Council is of course made without prejudice to future reconsideration of Pyridium.

The firm requested the reacceptance of Pyridium, expressing the hope that "the Council will find sufficient basis for formulating conditions upon which to grant a continuance of the acceptance of Pyridium." After careful consideration of the material submitted by the firm, the Council concluded that, while Pyridium may have some value as an adjuvant in the treatment of genito-urinary infections, this is a very indefinite, indeterminable property of a substance recommended for its positive value as a urinary antiseptic.

The Council decided that there does not appear to be sufficient basis for the formulation of conditions on which to grant a reacceptance of Pyridium and voted to reaffirm its previous decision to omit Pyridium from New and Nonofficial Remedies and authorize publication of the foregoing statement of its consideration.

ADDENDA

I Annotated List of Published Articles and Other Reports Consulted in 1932

An annotated list of the papers and reports studied by the present referee (except where otherwise noted) is as follows:

- 1 Ostromislensky I. Scientific Basis of Chemotherapy 1926. Book. Bacteriologic and clinical data unconvincing.
- 2 Belfeld W. T. and Rolnick H. C. Observations on the Physiology and Therapy of the Seminal Duct. J. A. M. A. 89:2104 (Dec. 17) 1927. Ingested and injected Pyridium excreted in seminal ducts. Spermatozoa stained. No therapeutic use of Pyridium reported here.
- 3 Hirschfelder A. D. and Decherd G. M. Inhibiting Effects of Lipoids upon Action of Antiseptics. Proc. Soc. Exper. Biol. & Med. 25:824-826 1928. Bacteriostatic tests with *B. coli* and *Staphylococcus aureus* exposed for three hours to Pyridium in salt solution and in solution with lipoids. Lipoids reduced the effect. Pyridium less bacteriostatic than acriflavine and mercuric chloride.
- 4 Pugh W. S. Infections of the Urinary Tract. The Use of Urinary Antiseptics. A. The Pyelonephritides. M. J. & Rec. 127:414-416 (April 18) 1928. Twenty cases reported in a summary table. Pyridium regarded as helpful in cases without anatomical defect.
- 5 Meyers J. L. The Elimination of Dyes by the Uterine Mucosa. J. Lab. & Clin. Med. 14:930-939 1928. Intravenously injected Pyridium stained the uterine mucosa of dogs. No data on concentration of dye in the mucosa. No clinical tests.
- 6 Wolbirst A. L. Oral Therapy in the Treatment of Gonorrhea and Other Urinary Infections. M. J. & Rec. 128:272-273 (Sept. 19) 1928. Reports personal experience with Pyridium as an adjuvant to local treatment. A preliminary report without much evidence presented concluding that Pyridium is a promising therapeutic agent.
- 7 Bernhardt E. Neuere Farbstoffbehandlung (mit Pyridium) bei Ulcus molle und Gonorrhoe. Dermat. Ztschr. 55:397-402 1928. Report on about twenty-one cases cured by Pyridium. Regards Pyridium as unentbehrlich. Acute gonorrhea cured in fourteen days by oral administration. Observations seem to have been carefully made. Many details not presented. Not convincing but of some value in favor of the drug.
- 8 Pugh W. S. Infections of the Urinary Tract. Prostatic Lesions. M. J. & Rec. 129:155-157 (Feb. 6) 1929. Oral administration of Pyridium plus massage greatly reduces the period of treatment of prostatitis. Good results claimed in acute posterior urethritis of gonococcal origin in epididymitis and in vulvovaginitis of children. No data given.
- 9 Stern R. Klinische Erfahrungen mit Pyridium einem neuen Harnantisepticum. Klin. Wchnschr. 8:1358-1359 (July 16) 1929. Report of three or four cases.
- 10 Stuckl O. Ztschr. f. Desinfekt. u. Conditsw. 21:33-37 (Feb.) 1929. Test tube bactericidal and bacteriostatic tests of solutions of Pyridium in salt solution and bouillon. Action decreased by presence of bouillon. In salt solution 1:1000 Pyridium killed *Staphylococcus aureus* at once. Bacteriostatic action in dilution of 1:10,000 at least. Much less effect on *B. typhosus* and *B. proteus* (1:1000 did not kill). Bacteriostatic action slight. Even less effect on *B. anthracis*. Bouillon reduced action as compared with salt. Activity of Pyridium considerably less than that of a 1:1000 solution of corrosive mercuric chloride.
- 11 Thomas B. A. and Wang I. K. Studies on the Comparative Clinical Values of So-Called Urinary Antiseptics. J. Urol. 22:41-42 1929. Pyridium in solution in water was bacteriostatic for *Staphylococcus aureus* 1:32,000 and for *B. coli* 1:500 bactericidal for *Staphylococcus aureus* 1:10,000 and for *B. coli* 1:100. In solution in urine it was bacteriostatic for *Staphylococcus aureus* 1:1,000 and for *B. coli* 1:400. It was bactericidal for *Staphylococcus aureus* 1:300 and for *B. coli* 1:50. Sixty samples of urine containing the excreted dye after oral administration were studied. Six samples had some bacteriostatic action against *Staphylococcus aureus* and none for *B. coli*. None of the samples were bactericidal against either of the two organisms.
- 12 Walther H. W. E. Clinical Application of Urinary Antiseptics. South M. J. 22:161-166 (Feb.) 1929. Tabulated report of fifty cases elected from a series of 200 cases of various sorts of urinary tract infection. Very favorable to Pyridium.
- 13 Baureisen A. Zur Behandlung der Cystitis mit Pyridium. Zentralbl. f. Bakt. 51:242-243 (Oct. 4) 1910. Shows that 1:1000 solution of Pyridium in water killed *B. coli* in thirty minutes and 1:10,000 killed in twenty-four hours. Urine containing

⁶ Davis, F. L. and Sharpe, J. C. Urinary Antiseptics. J. A. M. A. 93:10 (Dec. 17) 1927. (See also addendum 1.)

excreted Pyridium was not bactericidal and only slightly bacteriostatic for *B. coli*. Argument presented for Pyridium as an aid to the defenses of the body. Reports briefly result in about forty two cases of cystonitis. Ranks Pyridium high as a urinary antiseptic. Very few data given.

14 Furniss H D. Office Treatment of Urinary Tract in Women. *Am J Surg* 8 289 291 (Feb.) 1930. Pyridium thought to be effective in conjunction with other therapeutic measures.

15 Koster O. Bakteriologische und klinische Versuche mit Pyridium. *München med Wchnsch* 77 1013 1016 (June 13) 1930. States that a 1:2000 concentration of Pyridium can be reached in urine after ingestion of 0.6 Gm daily. Maximum concentration reached on the second day. No killing of organisms in 300 minutes in a 1:500 concentration of Pyridium excreted in urine, but some bacteriostatic action. Brief case reports on treatment of cystitis. Results favorable to Pyridium.

16 Mercier O. Le traitement des infections urinaires par les sels de pyridine. *L Union med du Canada* 59 739 742 1930. Pyridium not referred to by name but was evidently the substance used. The firm directed the referee's attention to this paper. Results of trials over a period of three years in 187 cases reported with very brief comments. No cure in any of 22 cases of acute gonorrhea. A 26 cases of chronic gonorrhea. Complete cure of 38 per cent of 29 cases of cystitis. Cures of acute pyelitis in seven to nine days. Brilliant results when infection was due to *Staphylococcus aureus*. Chronic pyelitis cured in eight to ten to eighty six days. Considerable improvement in other cases. Failures in some. Pyridium an absolute failure in treatment of gonorrhea but possibly beneficial in treatment of cystitis and pyelitis.

17 Neuburger J. Pyridium ein neues Harn-Infektionsmittel. *München med Wchnsch* 77 1016 1017 1930. Brief comments on good results in treatment of cystitis and pyelitis.

18 Orłowski. Pyridium bei Soringen im Urogenitaltraktus. *Ztschr f Urol* 24 838 842 1930. Brief reports on about forty five cases of prostatitis, cystitis, mostly chronic and refractory to other treatment. Miraculous results in a number of cases. Pyridium a useful sedative. A man who could not drink beer at night without wetting the bed was cured of this potential enuresis by taking Pyridium and securing diuresis before he went to sleep! Good results claimed in treatment of gonorrhea. Says that Pyridium refutes Neisser's aphorism that every case of gonorrhea gets well—except the first. There is a note by the editor (Dr. Casper) at the end of this paper placed there with the consent of Orłowski stating that Pyridium was no better than other urinary antiseptics.

19 Ravich A and Blaustein L. Study of 100 Suprapubic Prostatectomies. *Long Island M J* 24 425-429 (Aug.) 1930. Pyridium used as part of preoperative preparation. Good results claimed but there was no way of judging the effect of Pyridium among many other unknown factors.

20 Wolbarst A L. The Study of a New Antiseptic in Urinary Infections. *Internat J Med & Surg* 43 499 502 1930. Favorable to Pyridium but no new evidence presented. Reference to good results in use of Pyridium as an adjuvant to other methods.

21 Wolbarst A L. Gonococcal Infection in the Male. 1930. Book. Pyridium decidedly effective as an adjuvant to local treatment of gonorrhea and decidedly effective as an adjuvant to instrumental methods in pyelitis and other upper tract infections of *Staphylococcus* and *B. coli* origin. Largely a quotation from Dr. Wolbarst's previous paper.

22 Weil H. Ueber die Anwendung des Pyridiums bei Gonorrhoe. *Therap d Gegenw* 71 455 459 (Oct.) 1930. Short reports on about 115 cases of gonorrhea, both acute and with complications. Pyridium an absolute failure here. No favorable results of treatment of *B. coli* cystitis with Pyridium. It presents strong evidence against Pyridium.

23 David C. Trois nouveaux antiseptiques urinaires. *Hopital* 19 282 284 (April B). Pyridium cannot be used to replace local treatment. Mucosa of uterine cervix tinged yellow after oral ingestion of Pyridium. Not favorable to Pyridium.

24 Deakin R J. The Efficacy of Pyridium in Gonococcal Urethritis. *Missouri State M A* 28 123 125 (March) 1931. Average duration of treatment 6 cases local treatment alone 109 days. 17 cases local treatment plus Pyridium 79 days. Selected cases. Conclusion reached that Pyridium aided treatment. At best this is favorable to Pyridium as an adjuvant.

25 Goerner A and Haley F I. A Study of the Antibacterial Properties of Pyridium. *Urinary Antiseptic J Lab & Clin Med* 16 957 966 (July) 1931. Bactericidal and bacteriostatic tests of solutions of Pyridium in both oral and urine. Average bactericidal power 1:5000 and average bacteriostatic power 1:8000. Bactericidal values higher than those obtained by others. Increased time of contact of Pyridium and bacteria accounts for this. This paper submitted by firm in typewritten form in 1931. Review shows that it is not strong laboratory evidence in favor of Pyridium and does not give any clinical information.

26 van den Bergh A A H and Revers F E. Sulfhamoglobin nach Gebrauch von Pyridium. *Deutsche med Wchnsch* 57 706 708. Sulfhamoglobin formed when patients take Pyridium and magnesium sulphate at the same time. No clinical data given but reference made to studies by Revers and statement made that Pyridium is very useful for treatment of cystitis, pyelitis and prostatitis.

27 Mason L M. Pyridium Therapy in Genito Urinary Diseases. *Virginia M Monthly* 58 190 194 (June) 1931. Report on a two months clinical trial of Pyridium in treatment of prostatitis, pyelitis, pyelonephritis, gonorrhea and chancroids. Number of cases not recorded here. Brief abstracts of fourteen case records. Combination of therapeutic measures used in nearly all. No clear evidence in favor of Pyridium but author regards Pyridium as decidedly effective as an adjuvant to instrumental measures in urinary infections.

28 Müller F. Erfahrung mit Pyridium bei septischer Erkrankung. *München med Wchnsch* 78 233 235 1931. Remarkably good results in treatment of peritonitis, appendicitis, perimetritis, pyosalpinx, postpartal sepsis, puerperal infection with pelvic abscess, rheumatic fever (?). Single case of each reported. Surgery used in most of the cases but not in all. The series is too small and uncontrolled to be worth much except as an indication of a possibility.

29 Schofield F S. Typewritten reports preliminary and supplementary on Clinical Observations on Pyridium. 1931. Work done at University of Pennsylvania Urological Department. Tests made at request of Merck & Co. As control used previous study of 2000 cases of gonorrhea treated at that clinic. Average duration of treatment by copaiba by mouth and irrigation with potassium permanganate was thirteen weeks. These reports show twenty cases of gonorrhea greatly improved in from four to six weeks and eleven other cases of various urinary tract infections improved by Pyridium. Dr. Schofield does not state his opinion and does not seem to have published these very good results. This paper published later.

30 Tatum W B. Typewritten report sent in by the firm. "A Report of the Value of Pyridium in Forty Eight Cases of Urinary Infection." 1931. Work done at the instigation of Merck & Co. Varying good results in many types of urinary tract infections. Elaborately documented. Long case report. Author concludes that Pyridium has greatly benefited all cases treated and it has a definite place in urologic therapy as an antiseptic. This report is very difficult to summarize. It made a favorable impression.

31 Rosenthal B. Typewritten report submitted by the firm. "Dye Therapy in Chronic Prostatitis." 1931. Work done at the Gouverneur Hospital, New York. Combined Pyridium with other therapeutic measures in treatment of prostatitis and urethritis. Good results obtained. Abstracts of six case histories. Data scanty. Published *Am J Clin Path* 2 September 1932.

32 Haley F I and Goerner A. Typewritten report dated Nov 25 1930 submitted by the firm in 1931. Careful study of rate and amounts of excretion of Pyridium after oral administration. Possibility shown that excreted Pyridium differed from the Pyridium taken by mouth. Experiments showed that urine containing excreted Pyridium was bactericidal and bacteriostatic for *B. coli* and *Staphylococcus aureus* by prolonged contact of twenty four hours or more. Inconclusive data on stimulation of wound healing by pyridium. These data impressed the referee favorably and still seem to have value in indicating that prolonged contact of bacteria with urine containing excreted Pyridium may kill or hinder the organisms. No reference to publication of this paper has been found.

33 Riaboff P J. A Study of Pyridium as a Urinary Antiseptic with Special Reference to Its Elimination by the Kidneys. *J Urol* 27 329 342 (March) 1932. Report of careful work done under direction of Dr. Thomas and Dr. Kolmer at Pennsylvania. Pyridium had some bactericidal and bacteriostatic action against *Staphylococcus aureus* and *B. coli* in water and urine. But Pyridium excreted in the urine had no bactericidal or bacteriostatic effects on *B. coli* or *Staphylococcus aureus*. Strong acceptable evidence against Pyridium.

34 Gillespie J B. Experiments on the Antiparasitic Properties of Pyridium and Sereenum. *Proc Staff Meet Mayo Clin* 7 37 373 (June 22) 1932. No bactericidal action on *B. coli* or *Staphylococcus aureus* by urine containing excreted Pyridium in concentrations of 1:600 and 1:8000. No bacteriostatic action on *B. coli* and only slight on *Staphylococcus aureus*. Details of the bacteriologic methods used are not given. Presumably the bacteriologic work was satisfactory. This evidence is definitely against Pyridium.

35 Davis Edwin and Sharpe J C. Urinary Antiseptics. A Comparison of Methenamine, Cycloprol, Pyridium and Acriflavine as to Clinical Efficiency. *J A M A* 99 2097 (Dec 17) 1933. Pyridium given by mouth in 0.4 Gm doses did not cause the secretion of an antiseptic urine. *B. coli* grew luxuriantly in urine containing excreted Pyridium. Occasionally such urine decreased the growth of *Staphylococcus* but usually did not. The authors conclude that Pyridium has practically no effect other than to color the urine. No clinical case reports in this paper.

II Annotated List of Published Articles and Other Reports Consulted in 1933 After the Reply of Merck & Co to the Report of the Council's Consideration of Pyridium

36 Schofield F S. Specific Urethritis Treated with an Azo Dye. *Pennsylvania M J* 36 15 (Oct.) 1932. This is the publication of the typewritten report reviewed in reference 29. The majority of cases of gonorrhea reported here were complicated. The value of Pyridium therapy was judged by the time interval needed before the patient reached a quiescent stage in which it was deemed advisable to indicate prostatic massage or to search for other foci of infection. This averaged 24.9 days in a group of twenty patients. The referee is not convinced that the improvement noted was attributable to Pyridium. The cessation of injections, massage or the omission of urethral injections in acute gonorrhea established when a drug is given by mouth may be as helpful as the administration of the drug. Dr. Schofield does not report cures attributable to Pyridium but improvement. At best the drug appears from this to be a beneficial adjuvant.

37 Courtiss M. Antiseptics—Pyridium in Kidney and Bladder Infections in Pregnancy. Typewritten copy of a report from the Massachusetts Memorial Hospital in June 1932. Considerable amount of clinical material relating to 137 cases of pyelitis and cystitis. Eighty per cent of patients cured. 94 per cent relieved. Infection recurred in some cases. Lack of observations on untreated cases and lacks consideration of the expected postpartum improvement of infections occurring during pregnancy. Referee not convinced that Pyridium cured 80 per cent of these patients.

38 Goerner A and Haley F I. The Penetration of Pyridium into the Tissues of the Genito-Urinary Tract. report from the Long Island College Hospital. Sept 21 1932. Results showed penetration of the dye into the tissues. No proof that the amount and character of the compound in the tissues has antiseptic and therapeutic effects. Penetration has been previously considered by the Council as stated in this abstract.

39 Marion D and Magnan L A. *L Union med du Canada* 61 1061 (Sept.) 1932. Typewritten translation supplied by the firm. Record of results in The Use of Pyridium in Obstetrics and Gynecology. Cases of gonorrhea, pyelitis, cystitis, cervicitis and salpingo-ovaritis. Preliminary work indicating possible value of Pyridium. Referee not convinced by the evidence.

40 Brown T. K. Bacteriological Study of Urinary Infection in Pregnancy and Puerperium with Special Reference to the Use of Pyridium from the Department of Obstetrics and Gynecology, Washington University School of Medicine, St. Louis, 1932. Pyridium found to have some value in combating infections of the kidney due to staphylococci. Pyridium so ineffective in cases of pyelitis and cystitis due to colon bacilli that methenamine was prescribed as a routine along with Pyridium in mixed colon bacillus and staphylococci infections. Symptomatic improvement with Pyridium therapy in colon bacillus infections but the offending organism persisted.

AZOPHENE (MALLOPHENE) NOT ACCEPTABLE FOR N N R

In April, 1932, Azophene (formerly called Mallophene) was presented by the Mallinckrodt Chemical Works, St. Louis, for consideration of the Council as beta-phenyl-azo-alpha-alpha-diamino pyridine hydrochloride. It was proposed for use topically and orally as a genito-urinary antiseptic. Examination by the A. M. A. Chemical Laboratory had shown it to be identical with Pyridium (Collins, G. W. *J. Am. Pharm. A.* 20:445, 1931). Since Pyridium already stood accepted the Council considered accepting Azophene but postponed action until further investigation and disposition of questions which had arisen concerning the former.

Subsequently the Council, as a result of extended investigation, declared Pyridium unacceptable for continued inclusion in New and Nonofficial Remedies because the claims advanced for it as a local, general or urinary antiseptic are unwarranted (See report on Pyridium). In accordance with its original policy of considering Azophene and Pyridium as identical, and since, to the Council's knowledge, there exist no reports indicating that the former is superior in any way to the latter the Council declared Azophene unacceptable for New and Nonofficial Remedies because claims for its usefulness as a local, general or urinary antiseptic are unwarranted.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary

TIDAL WAVE CORN MEAL

Manufacturer—Texas Star Flour Mills, Galveston, Texas

Description—Finely granular white corn meal practically free from corn germ and bran.

Manufacture—The manufacture is essentially the same as that given for Ambrosia Cream Corn Meal (*THE JOURNAL*, Oct. 28, 1933, p. 1393) with the exception that all the corn grits stock is reduced and blended together to make the final meal.

Analysis (submitted by manufacturer) —	
Moisture	per cent 13.0–14.5
Ash	0.9–1.0
Fat (ether extraction method)	2.2–3.2
Protein (N × 6.25)	7.9–9.4
Crude fiber	1.8–3.0
Carbohydrates other than crude fiber (by difference)	73.9–69.9

Calories—15 per gram, 99 per ounce

IRRADIATED VITAMIN D PASTEURIZED MILK

Distributor—Kennedy Mansfield Dairy Company, Madison, Wis. (subsidiary of The Borden Company, New York)

Description—Bottled pasteurized vitamin D milk irradiated by Steenbock process (patent No. 1,680,818).

Preparation—Milk is irradiated by a CP Carbon Arc Lamp Milk Irradiator equipped with recording meters for measuring lamp energy input, output of milk pump, and ultraviolet ray emanations of the arc lamp which provide complete charts

of operation for inspection by plant and health officials. The irradiated milk is pasteurized by standard procedure (holding method, thirty minutes at 63 C), immediately cooled, automatically bottled and capped.

Vitamins—Clinical investigation shows this irradiated milk to be a reliable antirachitic agent protecting practically all infants excepting those prematurely born, contains 50 Steenbock vitamin D units per quart.

Claims of Distributor—Irradiated antirachitic pasteurized milk having otherwise the natural flavor and food values of usual pasteurized milk. Complies with the requirements of the state of Wisconsin and the health department of the city of Madison. The method of irradiation and the equipment are under scientific control.

KRASDALE TOMATO JUICE

Distributor—A. Krasne, New York

Packer—Edgar F. Hurff, Swedesboro, N. J.

Description—Canned pasteurized tomato juice with added salt retains in high degree the natural vitamin content the same as the accepted Hurff Brand Tomato Juice (*THE JOURNAL*, March 18, 1933, p. 818).

VITAMIN D FORTIFIED PASTEURIZED MILK SCOTT-POWELL

Distributor—Scott-Powell Dairies, Philadelphia

Description—Bottled pasteurized grade B milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil), contains 150 vitamin D Steenbock units per quart.

Preparation—The milk complies with the requirements specified by the laws of the states of Pennsylvania and New Jersey and the cities of Philadelphia and Gloucester and other municipalities in which it is distributed.

See this section for Vitamin D Fortified Pasteurized Milk of W. J. Kennedy Dairy Company, Detroit, for description of fortification with vitamin D (*THE JOURNAL*, July 1, 1933, p. 34). The milk is pasteurized by the standard procedure of holding at 62 C for not less than thirty minutes, is immediately cooled to 3 C and automatically bottled.

Analysis (submitted by manufacturer) —

	per cent
Moisture	87.2
Total solids	12.9
Ash	0.7
Fat	3.9
Protein (N × 6.38)	3.5
Lactose (by difference)	4.7

Calories—0.7 per gram, 20 per ounce

Vitamins—The vitamin D concentrate used in the preparation of this vitamin D milk and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent.

Claims of Manufacturer—A vitamin D fortified antirachitic pasteurized milk having the natural flavor and food values of standard pasteurized milk.

- (1) G. W. C. BRAND AMBER TABLE SYRUP
- (2) IOWA MAID AMBER TABLE SYRUP
- (3) MINNEAPOLIS BRAND AMBER TABLE SYRUP
- (4) VALLEY QUEEN BRAND AMBER TABLE SYRUP

(CORN SYRUPS FLAVORED WITH REFINERS SYRUP)

Distributors—(1) Grocers Wholesale Company, Des Moines, Iowa

(2) Charles Hewitt & Sons Company, Des Moines, Iowa

(3) Bismarck Grocery Company, Bismarck, N. D.

(4) Wilson Mercantile Company, Wausau and Rhineland, Wis.

Packer—Wheeler-Barnes Company, Minneapolis

Description—Table syrup, corn syrup base (85 per cent) with refiners syrup (15 per cent), the same as the accepted Golden Oak Brand Amber Syrup (*THE JOURNAL*, Dec. 3, 1932, p. 1948).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY DECEMBER 30 1933

THE RESPONSIBILITY OF THE PHYSICIAN IN THE PREVENTION, DIAGNOSIS AND TREATMENT OF CANCER

Cancer, it has been said, is an unsolvable problem, certainly for the problem of the cause of cancer not even an approximate solution is available. Indeed, the great central problem of life and cell growth has not yet been solved. Whether these problems are unsolvable, no one knows. The advance of biologic science is marked by efforts to explain the succession of phenomena that are laid bare as investigation proceeds rather than by the complete understanding of basic biologic problems in the final sense. In this gradual progress of science, results of great practical importance are achieved from time to time. The discovery of the tubercle bacillus did not solve the problem of tuberculosis, but it did show the right way for further study and for better control of the disease. How the bacillus produces disease and how the body reacts against the bacillus are still largely unsolved problems. The fact is that science provides no complete, no ultimate explanation of any disease, hence little wonder that the problem of cancer remains unsolved.

Notwithstanding the slowness of scientific progress, the knowledge of cancer is actually growing. The truth is that more advance has been made in detailed knowledge of cancer during the last two or three generations than in all previous time. The details of this new knowledge need not be reviewed item by item. The practical outcome is that, while any complete understanding of cancer has not been reached, the power of medicine to prevent, to diagnose and to treat cancer has been increased enormously. And the responsibilities of the physician with respect to cancer have increased likewise. On him rests primarily the duty to make sure that the individual patient receives the benefit of the knowledge and the measures that tend to prevent cancer. Briefly, prevention of cancer rests mainly on the avoidance and removal of "local irritation." Just how "local irritation" acts to cause cancer is not known but there is no doubt that it may lead to

cancer. Of the tissues liable to such irritations and chronic inflammations may be mentioned the uterine cervix with its lacerations and "chronic cervicitis," the skin and its moles and ulcers, the mouth, the tongue, the mucocutaneous junctions, the breast and the prostate with their chronic hyperplastic inflammations. Here is indeed a wide field for constant preventive efforts by the progressive, cancer-conscious physician.

Self evidently, on the physician rests also the main responsibility for the early diagnosis of cancer, on which in turn depends the outcome of its treatment. In connection with this matter, of such vital significance to the individual patient, the physician must consider thoroughly and conscientiously such questions as these: Has he formulated for himself a wise and practical plan for action in all cases in which the question of cancer may arise? Are his regular patients likely to report to him promptly the appearance of any suggestive symptom or sign? If not, why not? Is he fully prepared to take without delay the necessary steps, either by himself or through competent consultants, to secure the final diagnosis in a given case with a doubtful lesion? Does he realize fully that it may be a fatal error to tell a patient with a suggestive lump or lesion somewhere "to forget it and come back next month"? Are the services of a competent pathologist readily available and will adequate specimens for microscopic diagnosis reach the pathologist promptly and in the proper state of preservation? Are the special experts to whom he may refer cases for diagnosis and treatment fully equipped in all respects for prompt and efficient service? Does he accept in its full meaning the statement that the treatment of cancer, surgical as well as radiologic, should be entrusted only to those who have adequate skill and experience? These are questions that the physician must answer in a practical and trustworthy manner if he is to meet his responsibility with respect to cancer as now understood. Better control of cancer by prevention, early diagnosis and prompt treatment rests with the physician.

DINITROPHENOL AND ACCELERATED TISSUE METABOLISM

The discovery of a drug that gives promise of therapeutic usefulness is always an event of interest in medicine. Careful investigation and cautious clinical trial are indispensable before widespread application is undertaken. There have been few therapeutic innovations that have not sooner or later been found to present some limitations to their unqualified practical usefulness or even to involve unanticipated hazards to health. That is why it is extremely important to learn every ascertainable detail of the pharmacodynamic action of new products as early as possible. The problems of the range between useful and lethal doses, the causes of death, and possible antidotes must be considered with great care. This statement may be applied specifically

to 1-2.4 dinitrophenol, a substance demonstrated only a few months ago to produce fever in experimental animals¹ The observation that this compound can increase the metabolic turnover at once suggested its resemblance to well known stimulants of oxidative metabolism, such as the hormones thyroxine and epinephrine

The questions raised by the study of dinitrophenol, notably at the Stanford University School of Medicine in San Francisco, have already been considered to some extent in *THE JOURNAL*² Investigation of its pharmacologic properties shows that it has the power to increase metabolism to high levels without causing important damage to vital organs and functions Serious harm is apparently caused by the drug only in large doses, which produce too great metabolic stimulation with resulting fever In low, or therapeutic, doses, the metabolism may be increased 50 per cent or more over considerable periods without unpleasant symptoms or toxicity Such an action is useful in treating obesity, since the increased metabolism results in loss of weight, just as it does with thyroid medication As a suitable regimen of dinitrophenol medication for adults there has been suggested, on the basis of the early clinical trials in the reduction of obesity, an initial daily dose of 100 mg of the sodium salt orally, taken with meals, with an increase at weekly intervals until a dose is established that causes a loss of body weight of between two and three pounds weekly or too severe or unpleasant symptoms of warmth and sweating Such a procedure has been reported to be free from demonstrable evidences of cumulative or toxic effects Certain limitations, however, apply to a few susceptible persons

More detailed information as to the precise function of dinitrophenol is now available³ All of the disturbances provoked by the administration of dinitrophenol are attributable to a single primary action, that of accelerating the rate of oxidative metabolism The magnitude of this acceleration may approach values attained physiologically only under conditions of vigorous muscular exercise and far exceed those resulting from administration of the hormones normally concerned with the regulation of metabolism, thyroxine and epinephrine Specifically, the increase in oxygen consumption may amount to more than ten times the resting rate The studies at Stanford University show that the rise in body temperature that follows the increase in oxygen consumption is secondary to the acceleration in metabolism During the action of the

drug, pronounced decreases occur in liver and muscle glycogen, while blood sugar and lactates and muscle lactates tend to rise The total carbohydrate disappearing, however, accounts for less than half of the oxygen consumption The principal fuel of the accelerated metabolism must therefore be other than carbohydrate As there seems to be no increase in urinary nitrogen output, one may assume that fat is lost from the body Such observations fail to reveal any differences between the "excess" metabolism of dinitrophenol and that occurring normally Danger arises when the waste heat cannot be effectively disposed of Dinitrophenol is rapid in action compared to thyroxine, it apparently does not exhibit the complication of sympathetic stimulation so characteristic of epinephrine With fatal doses of the new drug, a decrease in respiration and oxygen consumption occurs shortly before death At this time lactates rise and the carbon dioxide combining power and the pH of the blood fall, indicating the development of a premortal anoxemia and acidosis However, with nonfatal doses, none of these phenomena appear Suitable cautions have already been given in *THE JOURNAL*, they warrant repetition The drug must be sufficiently pure, it has been stated that much of the material on the market is not sufficiently pure Aside from the skin reactions, the chief danger from this drug is in the indiscriminate or careless overdosing that may result from its sale to the public It has already been demonstrated that an overdose of sufficient size will cause a fatal pyrexia in man, just as it does in experimental animals That an overdosage may be toxic does not constitute a sufficient reason for not using dinitrophenol any more than for any one of many potent drugs commonly employed by physicians, but it does indicate that the treatment must be directed by the physician For maximal safety the initial dose of dinitrophenol should be small, and increasing doses may be employed only as the clinical response seems to warrant

"AVAILABLE" IRON IN THERAPY

The question of the type of compound to be preferred for use in therapy with iron has been the subject of debate for many, many years Empirically, the inorganic salts of the element found widespread use long before the end of the last century During that period distinctions began to be made between so-called organic and inorganic combinations of iron The term "masked iron" was sometimes given preference over the expression "organic iron" From the latter point of view the acetate and albuminate of iron for example, were both classified with inorganic iron because they are capable of dissociation and the iron therein is precipitated by ammonium sulphide Many sources of "food iron" that is, iron as it is present in common food materials such as the yolk of egg, appeared to belong to the category of "masked iron" At one period it was widely believed that 'food iron' and related

¹ Cutting W C and Tainter M L Actions of Dinitrophenol *Proc. Soc. Exper. Biol. & Med.* **29** 1268 (June) 1932

² Cutting W C, Mehrtens H G and Tainter M L Actions and Uses of Dinitrophenol *J. A. M. A.* **101** 193 (July 15) 1933
Tainter M L, Stockton A B and Cutting W C Use of Dinitrophenol in Obesity and Related Conditions *ibid.* **101** 1472 (Nov. 4) 1933
The Toxicity of Dinitrophenol *Current Comment* *ibid.* **101** 1600 (Sept. 30) 1933

³ Hall V E, Field J 2d, Sahyun M, Cutting W C and Tainter M L Carbohydrate Metabolism, Respiratory and Circulation in Animals with Increased Metabolism Heightened by Dinitrophenol *Am. J. Physiol.* **100** 432 (Nov.) 1933

compounds of the element possess a pronounced advantage from the point of view of readiness of absorption and assimilation. In the course of time, however, the pendulum swung away from this extreme view, leaving the conviction among most critical students of the subject that inorganic iron follows the same course as the food iron. At any rate, there was abundant experimental evidence that inorganic iron can function for the hematopoietic needs of the body.

The more recent investigations of the control of nutritional anemias produced in animals by the use of exclusive milk diets have given a new impetus to the critical consideration of iron therapy, particularly in hypochromic anemia. The contributory role of copper represents a new phase of the subject, though it does not fundamentally alter the place of iron. In the case of adults, at least, copper seems to be sufficiently ubiquitous, in the traces that may be requisite, to exclude it from serious consideration in the usual therapeutic routine. Of late, ferric ammonium citrate, used in large daily doses amounting usually to as much as from 4 to 8 Gm., has attained widespread vogue for reasons that are by no means obvious. Many of the formerly popular soluble iron salts seem to have become outmoded.

The availability of iron compounds to an anemic animal can be ascertained by a study of the rate of hemoglobin formation (in the presence of sufficient copper) or by the amount of iron stored in the liver. Recent tests of the former type have been made by Elvehjem, Hart and Sherman¹ at the University of Wisconsin. They show that the iron in a variety of soluble, readily dissociated salts is utilized with practically equivalent ease. This applies, for example, to ferric chloride, ferric pyrophosphate, ferric hypophosphite and ferric glutamate. Elvehjem, Hart and Sherman point out that this does not mean that all the available compounds are equally valuable. Other properties, such as taste and toxicity, are important factors. They have found that ferric pyrophosphate possesses many fine qualities. The iron in pyrophosphate not only is available but is held in such firm combination that it does not produce the astringent effects so characteristic of other iron salts. This salt, they add, may also be valuable in cases of anemia with achlorhydria, because it is soluble in neutral solutions and may be more readily assimilated in the absence of hydrochloric acid.

The Wisconsin biochemists have also made a real contribution to the comparative value of ordinary foods as sources of iron. This cannot be based on their total chemically assayed iron content. Each food contains a portion of iron that is readily utilized for hemoglobin formation and a portion that is unavailable and may consist mainly of hematin compounds. This may help to explain why certain iron salts appear to be superior

to food iron in the treatment of responsive anemias. Elvehjem, Hart and Sherman have found that the available iron in foods can be estimated "with a fair degree of accuracy by relatively simple methods, such as Hill's dipyrindyl procedure."² On this basis about one half of the total iron of such products as wheat, oats and yeast is "available" iron. The Wisconsin investigators have concluded that various forms of non-hematin iron, even insoluble salts, are much superior to hematin compounds (organic iron) as a source of iron for the body. Hematin compounds, they state, have no place in the group of therapeutic agents used for hypochromic anemias. Further research along these lines serves to dispel a considerable number of current prejudices, claims and misconceptions as well as to promote more rational practices in the domain of iron therapy.

Current Comment

THE CLINICAL PATHOLOGIST AS A TEACHER

The evolution of the clinical laboratory in the modern hospital constitutes one of the remarkable advances of the present century. The hospital laboratory is often the axis about which the scientific work of the institution revolves. In his presidential address before the recent annual meeting of the American Society of Clinical Pathologists, Walter M. Simpson¹ directed particular attention to the role of the clinical pathologist as a teacher. On the clinical pathologist, he pointed out, devolves a large share of the responsibility for the correlation and dissemination of the scientific aspects of hospital medical practice. The teaching activities of the alert clinical pathologist may assume several forms. A cheerful willingness to give a correct interpretation to laboratory results in the light of clinical observations constitutes one of the most fruitful forms of medical teaching, particularly as related to the welfare of the patient. The hospital staff conference and the clinicopathologic conference provide perhaps the best opportunities for the pathologist to contribute a large share to postgraduate medical education. The well directed clinicopathologic conference makes available the university idea of postgraduate medical education in every hospital that has a capable clinical pathologist. It is Simpson's belief that the clinical pathologist who does not fulfil this duty is missing his greatest opportunity to gain the respect and confidence of his medical brothers. Such conferences are capable of providing constant stimuli to the scientific activities of the hospital. Intelligent correlation and interpretation of the information gained by postmortem examinations will quite naturally create interest in morbid anatomy. The clinician is thus provided with a real incentive to obtain permission for postmortem examinations on his patients.

¹ Elvehjem, C. A., Hart, E. B. and Sherman, W. C. The Availability of Iron from Different Sources for Hemoglobin Formation. *J. Biol. Chem.* 103: 61 (Nov.) 1933.

² Hill, R. *Proc. Roy. Soc. London, Series B* 107: 205 1930.
¹ Simpson, W. M. The Clinical Pathologist as Consultant and Teacher. *Am. J. Clin. Path.* 3: 327 (Sept.) 1933.

The successful conduct of clinicopathologic conferences requires consummate tact. If the emphasis is placed too heavily on postmortem pathology at the expense of practical clinical aspects, the interest of the average practitioner will not be aroused. Attendance at the clinicopathologic conference should be optional and induced only by the excellence of the program. Such conferences should be held often enough to sustain interest. The weekly or biweekly clinicopathologic conference, lasting for an hour or an hour and a half, but not longer, will accomplish this end. The logical place for the conference is at the hospital. The time for the conference should be chosen with a view to inconveniencing the smallest number of persons. The programs should be arranged so that a wide variety of subjects may be discussed at each conference, in order that physicians in special fields may be induced to attend the conferences regularly. Recurring discussion of commonly encountered diseases is of much greater importance than emphasis on the presentation of rare and unusual ones. The clinical pathologist is the natural and logical director of such conferences. While it is generally admitted that the pathologist is usually "the court of last appeal," the shrewd and tactful pathologist will rarely exercise this prerogative. To give instruction to the informed physician is a different matter from teaching the uninformed layman or medical student. The exercise of restraint will often accomplish much more than a practice of forcing his opinions and decisions on his fellow practitioners.

FEDERAL MEDICAL RELIEF AND EMPLOYEES' COMPENSATION

In these trying times, actions ensue so rapidly in Washington that it is increasingly difficult for a medical journal, published weekly, to keep its readers abreast of the last minute advice regarding their relationship to government activities. Last week THE JOURNAL published an extended statement concerning 4,000,000 workers involved in the Civil Works Administration. It pointed out that apparently these 4,000,000 workers had been placed under the coverage of the Federal Employees' Compensation Act and that therefore they would be entitled to medical care in government hospitals and from government physicians for every injury and occupational disease sustained in the performance of duty. Now comes a revision of the original rules and regulations with a statement that it is retroactive to November 16. Apparently, employees of the Civil Works Administration may have the right to choose their own physicians under such circumstances. The new regulation states specifically that the benefits provided are not intended to be payable as compensation under the United States Employees Compensation Act. A protest by the Indiana State Medical Association directly to the President of the United States and to the United States Employees Compensation Commission accompanied by a similar protest by the director of the Unemployment Relief Commission of that state,

brought a reply indicating that all reputable physicians willing to give treatment at reasonable charges may be used for the care of employees of the Civil Works Administration. Moreover, the director of relief was authorized to notify local administrators at once that they are authorized to advise the local medical profession accordingly and to make arrangements to permit reputable private physicians to participate in rendering this service in places in which government medical officers and hospitals are not available and reasonably accessible. As long as the latter rule is in effect it will operate as a bar to the free choice of physicians by injured employees in such places as can make available government service. In the meantime the American Medical Association has called the situation to the attention of the Federal Civil Works Administrator, urging him to abolish the limitations described and to amend the regulation so as to permit employees to select their own physicians either from all doctors of medicine licensed to practice or else from lists of physicians approved by the United States Employees' Compensation Commission.

Association News

THE CLEVELAND SESSION

Authorization of a Symposium on Amebic Dysentery in the Scientific Exhibit

The Committee on Scientific Exhibit of the Board of Trustees has authorized a symposium on amebic dysentery in the Scientific Exhibit at the Cleveland Session, June 11-15, 1934. The sections of the Scientific Assembly taking part are the Section on Practice of Medicine, the Section on Gastro-Enterology and Proctology, the Section on Pathology and Physiology, the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health. The symposium will consist of a group of exhibits dealing with the diagnosis, treatment and prevention of amebic dysentery. Application blanks for space may be obtained from the Director, Scientific Exhibit American Medical Association, 535 North Dearborn Street Chicago.

MEDICAL BROADCAST FOR THE WEEK

Talks over Network of the National Broadcasting Company

The American Medical Association broadcasts each Monday afternoon from 4:45 to 5 o'clock Eastern standard time (3:45 central standard time). There will be no talk on Monday, January 1. The next talk over the National Broadcasting Company network will be on January 8.

Radio Talks from Station WBBM

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock central standard time over Station WBBM (770 kilocycles or 389.4 meters).

The subjects for the week are as follows:

January 2 Sterilized Milk
January 4 Health Regulations

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

January 6 Fermentation and Disinfection

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION PUBLIC HEALTH ETC)

ARKANSAS

Society News—Among others, Dr Earle H. Hunt, Clarks-ville, spoke before the Ninth Councilor District Medical Society in Harrison, December 5, on 'Vomiting in Pregnancy'—Dr Benjamin H. Hawkins, Mena, among others, addressed the Sixth Councilor District Medical Society in DeQueen, November 28, on "Lethargic Encephalitis"

Antimalaria Campaign Started—With the appointment of Dr William B. Grayson, Little Rock state health officer as state director of malaria control work, November 29, the statewide campaign in Arkansas was inaugurated. Work was begun at several places, December 4. The state has been divided into five districts. Salaries and wages will be paid by the Civil Works Administration, while expenses for materials and supplies will be borne by the U. S. Public Health Service.

CALIFORNIA

Lectures on the Heart—The Los Angeles County Heart Association conducted a series of lectures on heart disease in Los Angeles, December 7-8, the first three sessions of which were joint meetings with the Los Angeles County Medical Association. Dr Frank R. Nuzum, Santa Barbara, was the guest speaker, on 'The Use of Tissue Extracts in Angina Pectoris and Spastic Arterial Disease'. Local physicians participating in the program were Drs. Edward Richmond Ware, R. Manning Clarke, Phillip E. Rothman, Henry H. Lissner, Donald J. Frick, Burrell O. Raulston, John C. Ruddock, Howard F. West, Robert W. Langley, William H. Leake and Arthur Stanley Granger.

CONNECTICUT

Beaumont Exhibit—A collection of all the editions of the work of Dr. William Beaumont on the physiology of digestion, and other documents and memorabilia having to do with his life are on display at Yale University School of Medicine, in recognition of the centenary of the publication of "Experiments and Observations on the Gastric Juice". Included in this collection are two copies of the first edition, published by Allen in Plattsburgh, 1833, one of them in the original cover, a copy of the first edition published in Boston, 1834, a first edition of Combe's reprint, Edinburgh, 1838, a copy of the second edition, published by Goodrich in Burlington, 1847, a first edition of the German translation, Leipzig, 1834 and two copies of the first edition of the facsimile, reprinted in Boston 1929 on the occasion of the thirteenth International Physiological Congress. There are photostatic copies of Beaumont's license to practice medicine, granted in June, 1812, by the Third Medical Society of the State of Vermont, Beaumont's commission as surgeon of the U. S. Army, signed by President John Quincy Adams in 1828, and an early comment of Beaumont on the case of Alexis St. Martin, on whom his experiments with gastric juice were performed, published in the *Philadelphia Medical Journal* in 1826. The original letter sent by Beaumont in 1834 to Hezekiah Howe, New Haven book dealer, is in the collection. In this letter he says:

Will you please to let me know what number of copies of my Experiments and Observations, etc. you may have remaining on hand unsold soon as convenient? I shall probably have occasion to recall all surplus books from the Eastward to supply the Western market, my depot there having become nearly exhausted and the demand for them continuing.

The exhibit includes a letter from Benjamin Silliman, professor of chemistry at Yale, to Beaumont in 1823, which gives directions for sending a specimen of gastric juice to Prof. Jacob Berzelius in Sweden. There is also a volume of Proceedings of the Connecticut Medical Society in which reference is made to the election of Dr. Beaumont as an honorary member in 1833 and an account is given of his appearance before the society to demonstrate his patient in 1834.

FLORIDA

County Society Organizes Credit Bureau—Members of the Orange County Medical Society recently organized the Orange County Credit and Collection Bureau in Orlando. A state charter has been granted and the incorporators are Drs.

Calvin D. Christ, chairman, Horace A. Day, vice chairman, John R. Chappell, secretary, John S. McEwan, Lawrence C. Ingram, Meredith Mallory and Samuel A. Shoemaker. Credit rating of prospective patients will be made available to members of the society, and the bureau will serve as a clearing house for the physicians' accounts.

ILLINOIS

Society News—Dr. Ernest Sachs, St. Louis, spoke before the St. Clair County Medical Society in Belleville, December 6, on 'Diagnosis and Treatment of Brain and Spinal Cord Injuries'—Dr. Joseph L. Miller, Chicago, was among the speakers at the meeting of the Tri-County Medical Society (Henry, Knox and Warren), November 16, his subject was treatment of migraine.

Reserve Officers' Reception—The Cook County chapter of the Reserve Officers Association of the United States will give a reception in honor of Major General and Mrs. Preston Brown at the Army and Navy Club, January 6. All reserve officers, whether members of the association or not, are cordially invited and asked to bring, as their guests, ladies and also prospective members of the officers' reserve corps. Further particulars may be obtained from Col. Gilbert Fitz-Patrick, 185 North Wabash Avenue, Chicago or from the headquarters of the association, 53 West Jackson Boulevard.

State Advisory Board in Public Health—At the first meeting of the state board of public health advisers, December 4, called by the state health commissioner, three committees were appointed to work out details and recommend practicable programs for dealing with heart disease, amebic dysentery and trachoma. It was recommended at this meeting that the state department of health discontinue its treatment of patients with trachoma and restrict its activities in this connection to education in preventive practice. The promotion of prophylaxis against diphtheria and typhoid and the early adoption of a vigorous state-wide program for the control of heart disease were urged.

CHICAGO

Dr. Doan to Lecture on Leukopenias—Dr. Charles A. Doan, professor and head of the department of medical and surgical research, Ohio State University School of Medicine, will present an address before the Chicago Medical Society, January 10, on "Leukopenias from the Standpoint of the General Practitioner". January 14, the society will hold a memorial meeting in honor of its founder, Dr. Nathan S. Davis. The speaker will be Dr. James B. Herrick.

Course in Ophthalmology—Beginning January 1, a course on ophthalmology will be carried on in the hospitals of Chicago for interns and residents in this specialty, it has been announced. Two hundred hours of instruction will be given by fifty-three instructors from the universities and hospitals in the city, the lectures to be divided evenly between the fundamental and the clinical branches. Practically all the lectures will be delivered at the Illinois Eye and Ear Infirmary.

Society News—Speakers before a joint meeting of the Chicago Roentgen Society and Chicago Orthopedic Club, December 14, included Drs. Julius Brams on "Congenital Absence of the Femur" and Charles N. Pease, "Injuries to the Intervertebral Disk and Vertebra Following Lumbar Puncture"—Among other speakers Dr. Joseph Greengard spoke on "Comparative Tuberculin Tests in Children" before the Chicago Tuberculosis Society, December 14—Dr. John Philip Sandblom, Orebro, Sweden, among others, spoke at a meeting of the Chicago Society of Internal Medicine, December 18, on "Physiology of the Human Gallbladder Studied in Connection with Blood Transfusion and After Stomach Operations"—Speakers before the Chicago Gynecological Society, December 15, were Drs. George T. Palmer, Springfield, on "Tuberculosis in Its Relation to Pregnancy" and Irving F. Stein, "Oxygen Pneumoperitoneum in the Diagnosis and Treatment of Tuberculous Salpingitis".

INDIANA

Society Anniversary—The eighteenth annual meeting of the Indiana Society for Mental Hygiene, December 4, was an observance of the twenty-fifth anniversary of the mental hygiene movement. Among the topics discussed were "The Mental Hygienist's Attitude Toward Birth Control," "Conservation and Prevention," "Mental Hygiene and Education" and "Mental Hygiene and Crime". Speakers included Drs. Charles P. Emerson, Indianapolis; S. Spafford Ackery, Louisville; Louis A. Lurie, Cincinnati, and Olga Hoffman, Madison.

KENTUCKY

Lectures for Practitioners—The Franklin County Medical Society was host for a course of lectures conducted under the auspices of the Kentucky State Medical Association at Frankfort, November 23 Drs Emmet F Horine and Owsley Grant, both of Louisville, spoke on heart disease and prostatic and kidney diseases, respectively. The lectures were illustrated with motion pictures and slides and each was followed by discussion. A similar course was held in Williamstown for Grant County physicians in October by Drs Virgil E Simpson and Frank P Strickler Louisville. Discussions were presented on disease of the thyroid and of the gallbladder.

Society News.—A symposium on the thyroid gland was presented before the Jefferson County Medical Society, Louisville, October 2, by Drs Adolph O Pfingst, R Alexander Bate and William O Johnson. At a combined meeting with the Louisville District Dental Society, October 16, speakers were Dr John Stites, on 'Dental Infections as Related to the Field of Medicine' and Orville B Coomer, DDS, "The Growing Interdependence of Medical and Dental Practice". —Dr William R Davidson, Evansville, Ind, among others, addressed the semiannual meeting of the Southwestern Kentucky Medical Association at Marion, October 24, on 'The Infected Hand'.

MARYLAND

Society News—Dr Simon Fleener, New York, addressed the annual meeting of the Baltimore City Medical Society, December 1, on "Poliomyelitis and Other Virus Infections of the Central Nervous System"—At a meeting of the Allegany-Garrett County Medical Society, November 3, Drs Walter T Harrison, Washington, D C, spoke on diphtheria immunization, and Karl Winfield Ney, New York the idiopathic epilepsies—Dr Allen W Freeman, Baltimore, spoke before the Howard County Medical Society, recently, on 'The Future of Rural Medical Practice'

MASSACHUSETTS

Society News—Speakers at the fifth annual meeting of the New England Obstetrical and Gynecological Society, November 22, included Drs Frank A Pemberton Boston, on "Cancer of the Cervix—Prevention and Treatment", Stewart H Clifford, Boston, "Diseases of New-Born in Early Days of Life," and Herbert B Nelson, Boston, 'Analgesia in Labor'—Dr Edward D Churchill Boston, among others spoke before the Norfolk District Medical Society in Roxbury November 28 on "Surgical Treatment of Empyema"

Personal — Dr M V Govindaswamy, delegated by the Mysore government (India) to make a special study of American psychiatry, is now serving as clinical assistant at the Worcester State Hospital, collaborating in the research activities. For the past two years Dr Govindaswamy has served as clinical assistant at the Bangalore Mental Hospital — Dr Charles H Lawrence, Jr, has resigned as assistant professor of endocrinology at Boston University Medical School — Dr Frederick L Bogan Boston, was appointed superintendent of the Sanatorium Division, Boston City Hospital November 24, succeeding the late Dr John F O'Brien

MICHIGAN

Meeting on Medical Economics—A special meeting of the Wayne County Medical Society December 20 was devoted to medical economics with discussions of the Federal Emergency Relief Administration and the Civil Works Administration as concerns physicians Michigan poor relief laws and the doctors' situation in relation to them the abuse of free and part pay clinics and the state hospital at Ann Arbor Mayor John W. Smith suggested that the unemployed be given health examinations by their private physicians so that each man may be in good physical condition when he is called back to work This plan was also urged for all employees under the Civil Works Administration because an examination at this time would protect the government against malingerers of the future it was stated Plans to correct certain abuses were registered and a permanent clinics committee appointed to execute them The society will hold a rally on tuberculosis January 22 Drs. Henry C. Sweeney, Chicago and Bruce C. Lockwood will discuss Pathogenesis and Symptomatology of Childhood Tuberculosis Henry F. Vaughan, Dr. P.H., commissioner of health of Detroit will speak on Medical

MINNESOTA

Society News — Speakers before the Hennepin County Medical Society, December 27, were Drs Jennings C Litzenberg and Claude J Ehrenberg, Minneapolis, on endocrine control of menstruation and dysmenorrhea, respectively.—The Minnesota Academy of Medicine was addressed, December 13 by Drs Halbert L Dunn and Martin Nordland on "Practical Experiments in What Actually Constitutes a Good Clinical Record" and "Diagnosis and Treatment of Malignant Tumors of the Thyroid Gland," respectively.—Dr Earl E Carpenter, Superior, was elected president of the Interurban Academy of Medicine, November 15, whose membership is made up of Duluth and Superior, Wis, physicians. Dr Frank J Hirschboeck, Duluth, is the retiring president.

MISSISSIPPI

Program of Malaria Control—A state-wide malaria control and sanitation program will be carried on in Mississippi over a period of two and one-half months, newspapers reported November 30. It will be handled as a federal works project instead of an undertaking of the state Civil Works Administration. Dr. Felix J. Underwood, state health officer, is supervisor of the program, and Dr. George E. Ruley, chief of the malaria control division, will direct the malaria projects.

MISSOURI

Personal—Dr John C Morfit was recently elected president of the St Louis Medical Society.—Dr Paul F Stookey has been appointed epidemiologist of the Kansas City Health Department

Kansas City Academy Programs—The remaining lectures in the series of seven which comprise the 1933-1934 season of the Kansas City Academy of Medicine are as follows:

Dr William T Peyton director cancer clinic, University of Minnesota
sota Advancement in Diagnosis and Treatment of Malignant Dis
ease January 10

Dr. Ralph S. Muckenfuss, assistant professor of medicine, Washington University School of Medicine, St. Louis, Practical Clinical and Therapeutic Problems as Related to the Study of Virus Disease.

Dr. Charles A. Doan, professor of medicine and medical research, Ohio State University College of Medicine, Clinical Implications of Experimental Hematology.

Dr. Loyal Davis, professor of surgery, Northwestern University School of Medicine, Chicago. Clinical Application of the Newer Discoveries in the Field of Neurological Surgery.

Other lecturers in the series were Drs Albert M Snell Rochester, Minn., on 'Differential Diagnosis of Conditions Associated with Jaundice', Richard H Jaffe, Chicago, 'Endothelial Reticular System Its Clinical and Pathological Relationships' and Dr Robert T Frank, New York, 'Clinical Application of Newer Discoveries in the Field of Endocrinology'.

NEBRASKA

Society News—Dr Walter Lawrence Biering Des Moines Iowa, President-Elect, American Medical Association, delivered the principal address at the annual banquet of the Omaha-Douglas County Medical Society, December 12 on "Historical Sequence in Medical Events"—Drs Thomas L Houlton and Abram E Bennett, Omaha addressed the Otoe County Medical Society, Syracuse, December 11, on 'Head Injuries and Their Immediate Treatment' and Post-Traumatic Neurological Syndromes, respectively —Speakers at the January meeting of the Lancaster County Medical Society, Lincoln, will be Drs Miles J Breuer, on 'The Psychic Factor in the Etiology of Tuberculosis,' and Ruth A Warner and Grace Loveland A Satisfactory Technic for Early Pregnancy Tests' Dr Newell C Gilbert, Chicago, addressed the society, Lincoln December 5 on heart disease

NEW JERSEY

Award to Dr Theobald Smith—The Copley Medal of the Royal Society of London has been awarded to Dr Theobald Smith, director emeritus of the department of animal pathology, Rockefeller Institute for Medical Research, Princeton, in recognition of his research on diseases of man and animals, notably his work in establishment of the theory of insect transmission of diseases.

NEW MEXICO

Typhoid in Taos County—Sixty-two cases of typhoid occurred in twenty nine families in two Spanish American communities near Taos during the early fall according to the *New Mexico Health Officer* for November. Several possible sources for the epidemic were unearthed by Dr C H Donthurt who made an investigation for the state department of health but none were definitely proved. Both Ranchos de Taos and

Llano are on an irrigation ditch from which many persons take their drinking water. The few wells in the area are dug wells open to surface drainage. Samples of water from the ditch were negative for *B. coli*, but water from four wells was positive. Twenty-five cases were definitely the result of direct contact with other cases in the same house. Others of visits to relatives ill with the disease. Several patients had attended "velorios," gatherings at the homes of persons who have just died. On these occasions friends and neighbors spend the night, eating a midnight supper and breakfast in the home. Because of the distance from the state laboratory at Santa Fe, efforts to identify a carrier through laboratory examination were unsuccessful. Several deaths occurred. Some cases remained to be investigated. About 600 persons in the two communities received complete typhoid inoculations.

NEW YORK

Hospital News—Mr. J. Ward Thompson, superintendent of Rochester Municipal Hospital for thirty years, died, October 27. Contracts amounting to \$882,486 have been awarded for the construction of a state hospital for tuberculosis at Mount Morris. A tumor clinic was opened in November at St. Joseph's Hospital, Elmira, following a suggestion from authorities of the State Institute for Malignant Diseases at Buffalo, as a means of relieving overcrowding at the Buffalo institution. The clinic will be open one hour a week at first.

New York City

Personal—Dr. Joseph Eastman Sheehan has been made a member of the French Surgical Society. Dr. Simon Tannenbaum was the guest of honor at a testimonial dinner at Beth David Hospital, December 17, on his retirement as superintendent of the hospital. He will become medical director of Sydenham Hospital. Dr. William Browning was the guest of honor at a meeting of the Medical Society of the County of Kings, November 21, in recognition of his services in building up the society's library. Drs. James P. Warbasse and Frederick Tilney paid tribute to Dr. Browning, who was guest of honor at a dinner at the Montauk Club before the meeting.

Society News—Dr. Howard Lihenthal, among others, addressed the first fall meeting of the International and Spanish Speaking Association of Physicians, Dentists and Pharmacists, November 17, on "Dangers of Cerebral Embolism in Thoracic Procedures." Dr. David Riesman, Philadelphia, delivered the anniversary discourse of the Medical Society of the County of New York, December 18, on "Medieval Universities." Dr. Grant P. Pennoyer, New York, addressed the New York Surgical Society, December 13, on treatment of varicose veins and ulcers. Dr. William Seaman Bainbridge addressed the Society of Medical Jurisprudence, December 11, on "The Role of Trauma in the Production of Cancer." This society celebrated its fiftieth anniversary, December 16.

OHIO

Public Health Lectures—The Academy of Medicine of Cleveland and the Albert Fairchild Holden Foundation of Western Reserve University are sponsoring jointly the fourth annual series of public health lectures. Dr. Howard T. Karsner delivered the first lecture on "The Role of Germs in Modern Life," December 10. The second will be given by Dr. William Evans Bruner, January 14, on "Care of the Eyes in Youth and Age" and the third, February 18, by Dr. Harold N. Cole on "The Skin in Health and Disease."

Appointments at Cincinnati—Dr. Clarence King has been appointed professor and head of the department of ophthalmology at the University of Cincinnati College of Medicine, to succeed Dr. Victor Ray, who has been made professor emeritus. Dr. Gordon F. McKim, professor of urology since 1917, was made professor of surgery and head of the urological division to succeed Dr. E. O. Smith, who resigned because of illness. Dr. Smith was also made professor emeritus. To succeed the late Dr. Charles L. Bonfield, Dr. Frank M. Coopock has been appointed professor of surgery in the gynecologic division.

Society News—Dr. George E. Tollansbee, Cleveland chairman, Judicial Council, American Medical Association was the principal speaker at a meeting of the Eighth District Medical Society, in Cambridge, November 1, his subject was "Is Medicine a Profession or a Trade?" Dr. George T. O'Byrne, Lima, addressed the Van Wert County Medical Society, November 7, on "Feeding of Premature Infants with Special Reference to Copper and Iron." Dr. Max M. Zinniger, Cincinnati, addressed the Stark County Medical Society Alliance, November 14, on "Surgical Treatment of Acute Abdomi-

nal Emergencies."—Drs. George T. Harding, Jr., and George T. Harding III, Columbus, addressed the Tuscarawas County Medical Society, New Philadelphia, November 9, on "Present Day Conceptions of Mental Disease."—Dr. George I. Nelson, Columbus, addressed the Crawford County Medical Society, Bucyrus, December 4, on cardiovascular disease.

PENNSYLVANIA

Hospital News—The Robert Packer Hospital, Sayre, has obtained a loan and grant of \$425,000 from the Public Works Administration, for use in completion of a seven story brick, fireproof hospital with a two story brick extension. The Hospital Association of Pennsylvania has launched a campaign for exemption of hospitals from the state's new alcohol taxes. St. Joseph's Hospital, Lancaster, recently celebrated its fiftieth anniversary.

Society News—Dr. George W. Grier, Pittsburgh, addressed the Lawrence County Medical Society, December 7, on "Radium Treatment of Malignancy."—Dr. Thomas E. Mendenhall, Johnstown, delivered an address on "Endocrine Secretions" before the Somerset County Medical Society, Somerset, November 21. Among speakers before the Clearfield County Medical Society at the Philipsburg State Hospital, November 23, were Drs. James D. Doyle, Grassflat, on "Control of Complications Arising in Syphilis," George A. Ricketts, Osceola Mills, "Spontaneous Subarachnoid Hemorrhage," and Lester Luxenberg, "Metallic Poisoning."—A symposium on appendicitis was on the program of the Dauphin County Medical Society, Harrisburg, December 5, presented by Drs. Herbert F. Gross, John A. Fritchey, Earle R. Whipple and Frank F. D. Reckord. The Allegheny County Medical Society in cooperation with the Pittsburgh Child Guidance Center sponsored a public lecture in Pittsburgh, December 7, on "Mental Hygiene Problems of Today and Tomorrow," by Dr. Bernard Glueck, New York. The Montour County Medical Society sponsored a symposium on gonorrhea at the Geisinger Memorial Hospital, Danville, December 1. An operative clinic was held in the morning and a scientific program in the afternoon, with Drs. David Marine, New York, Frank H. Lahey, Boston, and William F. Rienhoff, Jr., Baltimore. Dr. Harold L. Foss, Danville, was chairman of the program. Dr. Temple S. Fay, Philadelphia, addressed the Cambria County Medical Society, Johnstown, November 9, on "Dehydration and Its Application."—Dr. Walter Estell Lee, Philadelphia, addressed the Delaware County Medical Society in Chester, December 14, on "Postoperative Pneumonia."

Philadelphia

Medical Economics Program—The meeting of the Philadelphia County Medical Society, January 10, will be devoted to discussions of medical economics. Hon. J. Hampton Moore, mayor of Philadelphia, will give an address on "The Municipality and the Medical Profession" and the following physicians will speak: Drs. Frederic C. Elliott, Brooklyn, chairman of the committee on economics of the Medical Society of the State of New York, on "Adjustment of Medicine to the Newer Economic Philosophy," Seth A. Brumm, president-elect Philadelphia County Medical Society, "The Activities of the Commission on Medical Economics in Retrospect," and Francis Ashley Faught, chairman, "Activities of the Commission on Medical Economics in Prospect."

SOUTH CAROLINA

Society News—Dr. Madison Hines Roberts, Atlanta, addressed the Greenville County Medical Society, recently, on problems of the new-born. Dr. William Egleston, Hartsville, president Medical Society of South Carolina, among others, addressed the Fourth District Medical Association at Spartanburg, recently, on functions of the state board of health. The Third District Medical Association held a meeting, October 5, at which speakers included Drs. Ernest W. Carpenter, Greenville, on nasal sinus problems, and George R. Wilkinson, Greenville, on nonsyphilitic aortitis.

TENNESSEE

Hospital News—Drs. Dean Lewis, Baltimore, President, American Medical Association, and James B. McElroy, Memphis, were guest speakers at an institute for physicians at Rutherford Hospital, Murfreesboro, November 27-28, under the auspices of the Commonwealth Fund. Dr. Lewis spoke on tumors of bone, fractures, lesions of the breast and diseases of the thyroid and Dr. McElroy on malaria, anemias and Bright's disease. Wheat's Hospital, Lewisburg, was burned, November 13, with a loss of about \$40,000.

Society News—Dr Daugh W Smith presented a review of 292 cases of incomplete abortion at a meeting of the Nashville Academy of Medicine, December 19. Dr Merrill Moore, Boston, addressed the academy, December 9, on acute syphilitic meningitis—Drs Horace B Cupp and Edward T West addressed the Washington County Medical Society, Johnson City, December 7, on 'The Role of Fluid in Surgery' and 'Surgery of the Biliary Tract' respectively—Dr Martin H Fischer, Cincinnati, addressed the Gibson County Medical Society, Trenton, November 27, on diseases of the blood vessels—Dr Robert B Gaston, Lebanon, was elected president of the Middle Tennessee Medical Association at its semiannual meeting in Murfreesboro, November 23-24. The next session will be held in Springfield. Among the speakers was Dr William D Haggard, Nashville, who discussed appendicitis.

WASHINGTON

Society News—Drs William F Patrick and Ivan M Woolley, Portland, Ore, addressed the Cowlitz County Medical Society, October 11 at Cathlamet on 'Differential Diagnosis and Acute Diseases of Children' and 'X-Ray Diagnosis' respectively—Dr Siegfried F Herrmann addressed the October meeting of the Pierce County Medical Society, Tacoma, October 10, on 'Anomalies of the Gallbladder'—Drs Samuel L Caldwell, Everett, and Elijah C Leach, Arlington, addressed the Snohomish County Medical Society, Everett, October 3, on 'Fractures in the Region of the Elbow Joint' and 'Non-union of Fractures,' respectively—Dr James Marr Bisailon, Portland, Ore, addressed the Walla Walla Valley Medical Society, October 12 in Walla Walla on 'Differential Diagnosis of Postoperative Lung Complications' and Drs James T Rooks, Jesse W Ingram and Carl J Johannesson, Walla Walla on 'Pulsion Diverticulum of the Pharynx'—Drs David Metheny and Joel W Baker, Seattle, addressed the Yakima County Medical Society, Yakima, October 9 on 'Intra-abdominal Repair of Inguinal Hernia and Retroperitoneal Approach to Subphrenic Abscess,' respectively—Dr James M Bowers, Seattle, presented a clinical study of gastric ulcers at a meeting of the King County Medical Society, Seattle, November 6, the paper was discussed by Dr Andrew B Rivers, Rochester, Minn., who also conducted a clinic at Harborview Hospital in the afternoon preceding the meeting—C Rufus Rorem, Ph.D., Chicago, addressed a special meeting, November 17, on 'Paying for Medical Care' and Drs Arnold W Hackfield and Donald V Trueblood, Seattle, spoke November 20, on 'Interpretation and Treatment of Functional Symptoms' and 'Radiation Therapy or Surgery for Cancer' respectively—The Lewis County Medical Society gave a banquet in Chehalis, November 13, in honor of its pioneer members—Drs John T Coleman, James M Sleicher, Emmogene P Sherman, Chehalis, and William Botzer, Mossyrock.

WEST VIRGINIA

Antidiphtheria Campaign—The Kanawha Medical Society and the health department of Charleston conducted an intensive campaign of diphtheria immunization, November 9-30. Henry F Vaughan, Dr P H health commissioner of Detroit, visited Charleston, November 7, to assist local authorities in planning the campaign, which was carried out according to the Detroit plan in which immunization is done in the offices of private physicians. Dr Vaughan also made a formal address on this subject before physicians of the city. Originally planned for only a few days, the campaign was continued for the rest of the month. During the first intensive drive 2210 children were immunized in physicians' offices. Toxoid was furnished by the state health department. An unusual number of cases in the city led Dr Hugh B Robins, city health officer, to inaugurate the plan.

WISCONSIN

Hospital Anniversaries—The Marinette and Menominee Hospital, Marinette, celebrated the fiftieth anniversary of its founding, November 9, with a reception at which Dr Clarence H Boren reviewed the history of the hospital and the town of Marinette. The hospital staff held an informal meeting in honor of Mr John I Boren, superintendent, who has been affiliated with the institution for forty-nine years and of Drs Maurice D Bird, Alexander T Nadeau and Henry F Schroeder, who have been associated with the hospital for twenty-five years. The hospital was founded by the late Dr Horace Mann—The Milwaukee Hospital, Milwaukee, celebrated the sevenieth anniversary of its founding, November 5. A tablet was unveiled honoring the three chiefs on whom it preceded the present chief, Dr Curtis A Evans.

they were Drs Nicholas Senn, William Mackie and Harry A Sifton. Speakers included Drs Stanley J Seeger, president of the State Medical Society of Wisconsin, and Robert Sayle, a member of the hospital staff for twenty-five years. There were also dinners for the nursing staff and for the medical staff, auxiliary board and interns association.

WYOMING

Banquet in Honor of Dr Conway—The Laramie County Medical Society gave a banquet, November 15, in honor of Dr John H Conway, Cheyenne, who retired from active practice in October after forty years service. Dr Galen A Fox, president of the society, presided and Dr George P Johnston paid tribute to Dr Conway.

PUERTO RICO

Bust of Dr Ashford—Special ceremonies in the School of Tropical Medicine of the University of Puerto Rico, San Juan, December 16, marked the unveiling of a bronze bust of Dr Bailey K Ashford, recently retired as a colonel of the medical corps, U S Army. Hon Benjamin J Horton, acting governor of Puerto Rico, presented the bust to the school of medicine, and George W Bachman, Ph.D., director, made the speech of acceptance. Other speakers were Carlos Chardon, chancellor of the University of Puerto Rico, and Dr Ratael Bernabe, president Medical Association of Puerto Rico. The casting of the bronze bust was unanimously approved by the legislature to recognize Dr Ashford as founder of the School of Tropical Medicine and as initiator of the first campaign against hookworm disease in America (THE JOURNAL, December 16, p 1976).

GENERAL

Change in Status of Licensure—The New York State Board of Medical Examiners reports the following action taken in September:

Licensure of Dr William J Ryan, Oakfield, N.Y., revoked by the board of regents on the ground that he had been convicted of a felony, namely, criminal abortion.

The state medical board of Ohio reports the following action taken October 3:

Licensure of Dr Johanna A C Roth, Columbus, suspended for six months because of her conviction on a charge of violating the federal narcotic law.

News of Epidemics—The Civilian Conservation Corps camp at Elk Grove, Pa., was placed under quarantine, December 7, when four members of the corps developed diphtheria—Schools in ten communities in one section of Muskingum County, Ohio, were closed, December 4, to stop the spread of scarlet fever; they were to remain closed until after the holidays—Churches, schools and the public library were closed in Vienna, Ill., December 19, in an effort to prevent spread of scarlet fever—An epidemic of mumps was reported to have affected one eighth of the population of 400 in the village of Pearl City, Ill., December 20. The public school was closed.

CANADA

Society News—Dr Harold Beckwith, Whitehouse, professor of gynecology and obstetrics, University of Birmingham, England, addressed the Toronto Academy of Medicine, October 14, on the menopause. Dr Paul Dudley White, Boston, spoke, November 7, on 'The History of the Development of Our Knowledge of Heart Disease.'

New Minister of Public Health—Dr Frank Roy Davis, Bridgewater, was recently elected to the provincial legislature of Nova Scotia as minister of public health, succeeding Dr George H Murphy, Halifax. Dr Davis, a graduate of Dalhousie University, has been medical officer of health of Lunenburg County since 1923 and has been on the surgical staff of Memorial Hospital, Bridgewater, for fifteen years. He also served as mayor of Bridgewater for four years.

University News—Canada's *Lancet and Practitioner* devoted its December issue to the class of 1892 of the University of Toronto Faculty of Medicine. Of fifty-four graduates, six remain in Toronto; fourteen are in Ontario; one is in Manitoba; fourteen live in the United States; and twenty have died. One member of the class, Dr Herbert A Preece, is lieutenant governor of Ontario—A medallion of bronze commemorating the late Dr Alexander S Munro, president of the Canadian Medical Association in 1931, was recently unveiled at the University of British Columbia. Dr Munro bequeathed a substantial fund to the university for medical education; when a medical school is established at the university.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec 9, 1933

The Radium Treatment of Cancer

The fourth annual report of the National Radium Trust and Radium Commission deals with the work of the past year and also summarizes the progress made in the four years since the commission came into being. There is now a network of seventeen fully equipped radium centers all over the country, and the organization, as originally planned, can be regarded as complete. The commission controls 22 Gm of radium, which is slightly in excess of the amount recommended by the committee of inquiry in 1929 as sufficient for the medical purposes of the country. The present report states that five years must elapse before an answer can be given to the question as to how much value can be attached to the radium treatment of cancer. Hence it is not possible as yet to see what effect the "national" policy is having on the cancer problem. Meanwhile, good work is being done in various directions, despite the discontinuance of the 4 Gm radium "bomb." The commission has been developing a 1 Gm unit treatment at three London hospitals. It is found that this type of massive radiation produces no serious or unforeseen constitutional disturbances with a maximum exposure of six hours a day and is likewise free from danger for the technical and nursing staff. The commission is leaving the problem of the large radium "bomb" to the newly constituted Radium Beam Therapy Research Board. Another valuable part of the commission's scheme is the postgraduate school of radiotherapy at Mount Vernon Hospital and the Radium Institute. More than 300 persons have now received instruction there. During the year a register of statistics to the commission, Mr R. W. Raven, F.R.C.S. has been appointed, and the summary cards supplied by the centers are being used for the compilation of yearly statistics. It is to this department that the greatest interest will be attached, for by its work the value of radium treatment will be determined.

The Toll of the Roads

The death toll of the roads remains a serious problem. In an inquest at Birmingham on a woman aged 68, killed in a street accident, the coroner said that in all these inquiries it was impressed on him that old persons did not stand a chance if they failed. In the main roads carrying fast traffic, people should be given a reasonable oasis of safety for crossing. If necessary traffic must be cut into sections, as was done in continental cities. They had surely got beyond the stage when, because an unfortunate person on foot did something wrong, he must lose his life. There was an onus on drivers in busy thoroughfares to keep a reasonable watch in order to combat some failure on the part of pedestrians. At Preston during the safety week, nineteen persons were injured—twice as many as last year. The chief constable's comment was "It is an unfortunate coincidence, but our efforts were directed to children, not adults. Adult pedestrians are past redemption."

The total number of persons killed in road accidents in Great Britain during 1930 was 7,305, during 1931 it was 6,691, and during 1932, 6,667. During the first six months of 1933 the number was 3,061, as a result of 2,998 accidents. An analysis was made of the fatal accidents according to the hours of the day. During the early morning hours, when there is little traffic on the roads, the percentage is small (0.4). It rises to a small peak between 7 and 9 a. m. (3.4) drops between 9 and 10 (2.6) and then increases, rising to a further peak between

noon and 1 p. m. (7.0). It then declines but rises again after 3 and reaches its highest point between 5 and 6 (9.4). It then gradually decreases but reaches a further peak between 10 and 11 (7.3). These peaks depend on variations in the volume of traffic, both pedestrian and vehicular. Thus there are peaks at the time many people go to work, during the luncheon hours and when a large number return from work. Of the persons killed in the first six months of 1933, 1,581 were pedestrians of whom 857 were killed crossing roads, and of these 224 were passing behind or in front of a stationary vehicle, 314 pedestrians were killed not when crossing the road but when running into the roadway, 46 were killed on footpaths, 71 on a refuge, 84 were killed when walking along roads. Of the pedestrians killed while walking on the carriage way, 66 were walking in the same direction as the traffic and 18 against it. Where no footway is available, the highway code recommends pedestrians to walk on the right of the carriage way, so as to face the oncoming traffic.

THE CAUSES

A long table gives all the causes of the fatal accidents assigned by the chief constables. Only 265 out of 2,963 accidents analyzed gave excessive speed as a contributory cause. Inattention on the part of a driver was given as a contributory cause in 139 accidents. Pedal cyclists gave a high number of cases and in practically all the cyclist was the victim. Of the contributory causes attributable to pedestrians, "running into the roadway" was the most frequent and, next, "pedestrian walking or running from behind a vehicle without due care." In 242 accidents, "pedestrian apparently becoming confused or hesitating in traffic" is given as a contributory cause. Apart from mechanical defects, the most important cause contributed by vehicles was inadequate front lighting (thirty-two accidents). Dazzling headlights contributed to twenty-nine accidents. A frequent contributory cause was obscuration of the views of drivers at corners or bends.

PARIS

(From Our Regular Correspondent)

Nov 15, 1933

The Congress of Urology

The thirty-third congress of the Association française d'urologie was held at the Faculté de médecine under the chairmanship of Dr. Bernasconi of Algiers. The topic for discussion was "Methods Other Than Prostatectomy for the Treatment of Hypertrophy of the Prostate." The preliminary papers were presented by Drs. Bernard Frey and Raymond Dosset of Paris. Medical treatment by the injection of pepsin-procaine into the prostate, the administration of testicular hormones, and the subcutaneous injection of the male hormone are methods that are being tried out. The resection of the vasa deferentia has been abandoned in France. Roentgenotherapy and radium therapy are of questionable value and they are dangerous in case of infection. Since they are always combined with the use of sounds and with lavage it is difficult to determine just what their influence has been. They are permissible in beginning cases without retention, and in the congestive types, but are contraindicated in aged and infected patients and in those who have large adenomas. There remain the resection methods performed, with the aid of endoscopy by the transvesical or the urethral route. The authors considered these methods comparing them with the results of classic prostatectomy. Partial transvesical resections have advocates in France (Legueu, Heitz-Boyer, Martin-Laval) in cases in which the ordinary operation would be dangerous on account of the size of the tumor, the risk of hemorrhage or the general condition of the patient. Resections by the intra-urethral route and electrocoagulation give in general good immediate results.

This is, however, a delicate operation for the surgeon who has had wide experience with its technic, and it is contraindicated in cases presenting very large or bleeding prostates in which neoplastic degeneration is suspected. The statistics of American surgeons are impressive.

A long discussion arose between the members of the congress concerning their results. Professor Marion prefers prostatectomy in all cases in which the condition of the patient justifies the operation and also in cases in which other methods have proved ineffective. In patients unable to withstand prostatectomy, and in patients strong enough to endure the operation but who have only small adenomas, one can attempt destruction of these by conservative means. The same methods may be tried to destroy larger adenomas in persons who cannot withstand transvesical prostatectomy. Radium should be reserved for weak patients who could not endure an operation. Dr Luys defended his forage operation on the prostate and presented statistics to prove its benign nature. But the endoscopic methods encountered opponents, who contended that they were incomplete and did not always prevent infection, hemorrhage or even death. Blanc of Bordeaux, Guisy of Athens, Gayet and Phelip (Lyons) and Chauvin of Marseilles reported a few successful outcomes in very simple cases, but they expressed the opinion that prostatectomy is still the only effective operation with which to combat adenoma of the prostate, especially since advances in technic have reduced the risk of operation. That is the view also of such eminent urologists of Paris as Papin and Pasteau. In fact, Pasteau rejects every other intervention as illusory and dangerous. Many of the advocates of the various substitutes for prostatectomy, with the exception of Luys, resort to endoscopic methods only in special cases.

Numerous further communications dealing with diverse subjects were presented. Phelip of Lyons cited several cases of urinary infection of dental origin, transmitted by the blood stream. Pasteau reported a case of pharyngeal origin. Widholz of Bern stated that he had secured excellent results in nontuberculous aseptic pyuria by means of intravenous injections of neoarsphenamine in doses of 0.0015 Gm. Mr Pillet reported some curious observations to the effect that, in alkaline urine, the formation of phosphatic, ammoniomagnesian calculi is facilitated by pyrexia, a rise of from 1 to 3 degrees in temperature being sufficient to precipitate these crystals when all the elements are combined. Mr Barbellion called attention to the following test to discover whether a patient has recovered from gonorrhea. After the imbibing of an abundance of beer, massage of the prostate, not followed by lavage or urination within five hours, examination of the urethral secretion for the presence of gonococci. In positive cases, especially if the patient has engaged in coitus, the urine will be found to contain gonococci. In negative cases gonococci will not be found.

Jules Janet and Debrins discussed gonococcal autovaccines and expressed a preference for those in which the gonococcus has been killed at the lowest temperature possible in order not to change its biologic properties. They are superior to stock vaccines because they contain gonococci of the desired strain, and fresh specimens. Jeanbrau and Truc (Montpellier) reported a case of complete retention of urine in a woman for thirteen months which was immediately cured by the Cotte operation consisting in resection of the presacral nerve. Dr Lowrey of New York gave an exposition of three of his procedures in renal surgery. He sutures the wounds of the kidney in nephroscopy with a ribbon of catgut which envelops the organ and which is held in place by passing it cut into several strips into the fibrous capsule. He arrests hemorrhage of the parenchyma by introducing fatty tissue into the wound which he regards as the best type of hemostatic. He performs

nephropexy by fastening the kidney by two strips of chromic catgut, one at each of its poles, the one being attached to the twelfth rib and the other to the quadratus lumborum muscle.

Dr Harvey Cushing Honored

The ceremonies in connection with the formal reopening of the University of Paris, this year, were attended by the president of the republic. The several scientists who were accorded the title of doctor honoris causa were all present, each wearing the garb of his own university. Dr Cesar Vivante, professor of law at the University of Rome, Professor Levi-Civita of the faculty of sciences, University of Rome, Mr Puig y Cadafach, president of the Catalan Institute of Barcelona, Professor Van Itallie of the University of Leyden, Prof Franz Volhard of the University of Frankfurt, and Dr Harvey Cushing of Yale University, on whom special honors were bestowed. Professor Roussy, dean of the Faculté de médecine, made this declaration: "I render public homage not only to one of the greatest surgeons of the United States of America but also to the man whose work in anatomy, physiology and clinical surgery has brought great progress to modern neurology and to the ingenious inventor whose new forms of technic have made it possible, during the past thirty years or more, to save thousands of lives." Then, after enumerating the chief works of this master of neurology and rendering homage to the surgeon and teacher, Professor Roussy concluded with these words: "Georges Clemenceau, then minister of war and president of the cabinet, in recognition of your valuable aid given to the ambulance companies, during the war, in the region of Neufchâteau, desired, at the time of your departure from France, to give a testimonial of his esteem and gratitude. His gift was his doctor's thesis in medicine, submitted in 1865, which is a very rare booklet. This esteem, this gratitude, and this admiration, the University of Paris and the medical profession of France are happy to take this occasion to endorse."

BERLIN

(From Our Regular Correspondent)

Nov 13, 1933

Anemia Due to Goat's Milk

Professor Rominger, director of the university children's clinic in Kiel, has begun a research on the pathogenesis and therapy of anemia due to the use of goat's milk. On the basis of comprehensive studies on metabolism in healthy and sick children who were nourished with goat's milk and observations in animal experiments, he discussed the question as to whether anemia due to goat's milk is the result of a trophotoxic or a trophogenic injury. Clinical observations show that it is at least improbable that goat's milk as such has any toxic qualities. Feeding experiments on young growing white rats led to the conclusion that an exclusive diet of cow's milk produces an anemia of the chlorosis type (hypochromic anemia), which is evidently due to a lack of iron, since it can be both prevented and cured by the administration of iron. An exclusive diet of goat's milk produces in very young white rats an anemia of the pernicious type (hyperchromic anemia). This experimental hyperchromic goat milk anemia cannot be cured solely by the administration of iron nor is it due to a lack of vitamin C. Furthermore it can neither be produced nor exacerbated by the administration of unsaturated volatile fatty acids of goat's milk. It can however, be prevented and cured by the injection of liver extracts. It is a complex deficiency disease in which the factor that counteracts any tendency to perniciousness—namely, the so-called extrinsic factor—is absent and liver extract iron. The good effects of a combined liver extract and iron therapy were observed by Rominger. Within four weeks therapeutic results could be secured such as were obtained with the former therapy even along with the application of

blood transfusions, usually only after several months. According to these observations arsenic, artificial heliotherapy and extirpation of the spleen are no longer indicated. From the standpoint of prophylaxis, the use of goat's milk without the addition of liver and iron must be avoided, but if these additions are made, there is no objection to goat's milk in the diet of infants. It may be mentioned that goat's milk contains more copper than other kinds of milk.

Adopt Policy of Free Choice of Physician

Previous letters have dealt with the reorganization of the federal *krankenassen* system (*THE JOURNAL*, November 18, p. 1652). At last the controversy that existed in Berlin between the municipal administration and the *Gross-Berliner Aerztebund*, with reference to the proper care to be given to the so-called *welfare* and unemployed has been settled. To this class belong those who since they have no income pay no dues to the *krankenassen*. The municipality itself must provide for them. Until recently members of this group in some districts of the city had to apply in case of illness to a certain 'welfare physician,' who devoted only part time to this service. This arrangement did not result in very confidential relations between physician and patient. Furthermore the number of part time 'welfare physicians' was so small that often unpleasant situations occurred owing to the crowded conditions prevailing during consultation hours. In other districts, those in need of aid had a free choice of physician, but the compensation of the physicians was very small. Both parties therefore failed to be satisfied with this system, and the medical profession of Berlin carried on a campaign for years to secure for such patients and for themselves something more satisfactory. Now the system of part time physicians has been abolished in Berlin. The physicians now receive a fixed amount annually for each patient who, over an extended period of time belongs to this group, while intermittent care given certain patients is paid for according to service rendered. As a result of a new system in which the *vertrauensärzte*, or confidential physicians, of the *krankenassen*, play an important part there seems to be some expectation that the superfluous use of medicines will be checked. For this purpose a central prescription control center has been established at the municipal bureau of health. Domestic treatment will be restored to its former position, to which it is entitled. Thus the old demand of the physicians for a free choice of physician by patients has been set up in Berlin at least as far as the physicians admitted to panel practice are concerned. In view of the financial condition of Berlin it is impossible to satisfy all the financial desires of the physicians.

In Hamburg, the waiting room problem has been taken up by the Hamburg "chamber of physicians," which has declared that it is absolutely inconsistent with the idea of popular sovereignty to make in a physician's waiting room any distinction with respect to patients as to whether they are 'welfare patients,' *krankenasse* patients or private patients. Hence, dating from this announcement, special consultation hours for private patients, and the equipment of special waiting rooms for such patients, are prohibited.

The Berlin Academy for Graduate Training

Although for decades facilities for the training of domestic and foreign physicians have existed in the city Berlin will open in January an academy for graduate medical training. The instructors, who must be teachers in the various specialties will be selected by the mayor with the aid of a scientific committee on instructors. The purpose will be to organize graduate medical training on a uniform basis and to afford an opportunity to general practitioners, specialists, assistant physicians in the municipal hospitals and physicians in other communal welfare departments to participate in courses and in

practical activities. It is the plan to organize, for the benefit of physicians of Berlin and vicinity who have little leisure in the evenings, lectures and demonstrations covering one or two hours a week, for a period of from two to three months, in many different hospitals of Berlin. In addition there will be eight to fourteen day courses on selected subjects with practical demonstrations. To give physicians the opportunity to do practical work from clinical points of view, whole day clinical instruction courses with the chief emphasis on practice work will be held in the municipal hospitals, which, it is thought will make for a better understanding between the general practitioner and the specialist.

Further Details on the Higher Institutions of Learning

Reorganization of the higher institutions of learning (*THE JOURNAL*, Dec. 16, 1933, p. 1980) is proceeding in various directions.

The league of the German institutions of higher learning, the conference of German rectors, the federation of German university teachers, the Bavarian league of university teachers, and the society 'The German State' have voluntarily combined, with a view to promoting a federal organization of all German institutions of higher learning and of the teaching personnel of such institutions. The new organization, under the supervision of the federal ministry of the interior, will protect the cultural importance of the German institutions, also in relation to foreign countries and will cooperate in renovating the German system of higher instruction in agreement with the national-socialist world-view and in the endeavor to make the universities an organic part of the German body politic and the national life. Prof. Herwart Fischer, ordinarius in legal medicine at the University of Würzburg, has been chosen as leader of the new organization.

After the beginning of the winter semester the training school which has assumed the task of giving the new type of students preliminary training in statecraft will reopen. The objective of this political training is the acquisition of knowledge that will fit the student to play a prominent part in national politics. The University of Berlin student body has published a work schedule and study plan that illustrate the essentials of this new movement, the *fachschaftsarbeit*. According to this plan this work is compulsory for all students of the second and third years. A special training of a wider scope has been prepared for the first year students. Those who have attended German universities three years are not required to participate in the *fachschaftsarbeit* but it is recommended that they do so. The work is not compulsory for women but they will be admitted to the courses as volunteers.

Depending on whatever is their major subject the students are divided into six different groups or so-called *fachschaften*. The group interested in popular education will study conditions in eastern Germany, the minority problems of the last century, and German-Russian relations. The group interested in German law will study The State and the protection of races and of nationality in the penal code. In the group interested in political economy, the colonial director of Greater Berlin, of the national-socialist party will speak on national-socialism and colonies. The theological group will discuss symbolics, or historical theology and its significance for our day—particularly Luther, Melancthon and Calvin. The medical group will study race problems and social problems. The group interested in the natural sciences will be divided into four subgroups: biologic, geographic, mathematicophysical and chemical. At the close of the semester, every student receives a certificate setting forth the work performed. The movement will have a special journal called *Wissen und Dienst* to be edited by the director of the Berlin circle of the German student federation.

Number of Health Insurance Societies in Germany

From the reports of the head insurance bureaus, it will be seen that at the close of the year 1932 there was a total of 6,638 *krankenkassen*, namely, 2,046 communal *krankenkassen* (*ortskrankenkassen*), 428 rural *krankenkassen*, 3,266 *krankenkassen* of industrial units (*betriebskrankenkassen*), and 798 *krankenkassen* of guilds (*innungskrankenkassen*). The last two categories show a reduction in membership, which has been further accentuated since the reorganization of the whole federal health insurance system.

Professor Magnus to Direct Surgical Clinic

The university surgical clinic in the Ziegelstrasse in Berlin (not the clinic in the Charité Hospital, which is under the direction of Professor Sauerbruch) had been closed (by the former government). The new government announced, several months ago, that this famous clinic (Professor Bier being the last incumbent) would be reopened. To this important post Prof. Richard Magnus, chief physician of the Bergmannsheil Hospital in Bochum, has been called. Magnus, who is 50 years old, is a pupil of Friedrich König and Guleke. The hospital of which he has been a director is regarded as the largest hospital in Europe for patients who have suffered accidental injuries. Magnus's numerous publications deal chiefly with the treatment of fractures, war surgery and problems concerning joint infection.

Professor Siebeck Summoned to University of Berlin

The chair of internal medicine and the directorship of the first University Medical Clinic formerly held by Professor His, had been vacant some time, but now Prof. Richard Siebeck, clinician of the University of Heidelberg, has been summoned to occupy the post. Volhard of Frankfurt-on-Main recently rejected the offer, and, still earlier, Schittenhelm of Kiel was not inclined to move to Berlin. Siebeck is 50 years old. At the University of Heidelberg, he has been occupying the chair of his former teacher Krehl. His published writings deal chiefly with disturbances of the circulatory and respiratory organs, and with the kidneys and with the water balance.

JAPAN

(From Our Regular Correspondent)

Oct 28 1933

Vaccination Against Typhoid

Typhoid vaccination has again become the subject of heated discussion in medical circles all over the country. Typhoid vaccination has been widely adopted in places exposed to this disease and yet its absolute potency is never relied on. At a meeting of the Kitasato Research Institute Dr. Kobayashi of the Keio Medical College recently criticized the value of typhoid vaccination. His paper provoked discussion in various circles throughout the country. His criticism was directed chiefly against the statistical reports of the metropolitan police board. He said that it is very difficult to form a conclusion on the potency of vaccination merely on the basis of statistical research for in a sudden outbreak of typhoid complete protection could not be expected.

Dr. Inokuchi, chief of the prevention bureau of the metropolitan police board, says that in the metropolis in the past eight years about 1,600,000 people have been inoculated almost every year. The percentage that contracted the disease among the inoculated has varied from 3.5 in 1925 gradually down to 0.67 in 1930. On the other hand the death rate among the inoculated averaged 15 per cent more or less but among the non-inoculated was about 20 per cent every year. He insists that the smaller death rate must be attributed to the increase in the annual inoculation which tends greatly to reinforce the potency of the vaccination. He says that at least some people

have been inclined to lessen the amount of vaccine used for fear of reactions, but even a smaller quantity and a less potent vaccine, if repeated every year, is a certain preventive. Where sanitation is so poor as in the capital, this inoculation should be considered an essential measure for the time being. Dr. Kajitsuka, dean of the military medical school, says that the army believes in vaccination, even if not in its absolute value, and if an improvement in the kinds of vaccine to be inoculated could be attained, a much greater effect might be realized. Statistically, the death rate in the army has been lowered through yearly inoculation. On the other hand, according to reports given by Dr. Kawaguchi, chief of the isolation hospital of Tokyo, hardly any difference could be recognized between the vaccinated typhoid patients and the non-vaccinated, at least in his hospital. Toxic conditions and nervous system complications seemed rather more severe among the inoculated, among whom the death rate was often higher. Of course, sometimes an inoculated person had a mild attack of typhoid. He therefore was bewildered as to the effect of the inoculation. Some discharged soldiers who had been inoculated while in the army, he says, contracted severe typhoid soon after their discharge. He doubts its essential effect.

Dr. Urabe, medical expert of Nagasaki, a seaport, reported in detail his investigations, saying that since 1926 the number of those who were inoculated had increased every year but that the number of cases of typhoid had increased or remained the same yearly.

In 1931 a sudden outbreak of typhoid took place there, and the rate was quite high. He concludes that the period of immunity is uncertain. He reported 146 cases occurring within one month after vaccination, sixty-six cases within two months, and forty-one cases within three months. Inoculation during an epidemic therefore seems to be of comparatively little use. He adds that a little vaccine should be given frequently rather than a great deal at one time. About 10 per cent of those vaccinated were obliged to go to bed on account of reactions. This was caused by negligence in the observation of the specific type of constitution of some people and also by giving them too much vaccine. He continued that the great loss of money and of time both by the public and by the municipal office should be considered in view of the comparatively small value of vaccination. He earnestly longs for some better measure in typhoid prevention.

Dr. Tashiro, surgeon commander of the imperial navy, in opposition to the former opinion said that he has every reason to believe that the period in which inoculation remains potent is about six months. In the navy every sailor is vaccinated twice a year. The reason typhoid may be contracted in the first month after vaccination he attributes to the fact that the immunizing bodies develop insufficiently during that period to be really potent. In Moji another seaport the typhoid cases were about five a month before general inoculation began all over the city but in April of this year inoculation was given to about 40,000 persons (40 per cent of the whole population) and 4,948 persons were given vaccine orally. In May thirteen cases and in June twenty cases suddenly broke out among those who took the vaccine orally, not among those inoculated.

On the contrary in the city of Ito near Tokyo vaccination against typhoid has been regularly done since 1921, accompanied by improved sanitation necessary to annihilate typhoid. In 1921 139 cases were reported before inoculation but the number of cases has gradually and regularly decreased year by year. In 1932 only three cases were found. The city authorities and the physicians concerned are firm believers in the effectiveness of vaccination. On the whole more statistical investigations must be reported to decide the question. Many believe that the absolute value of inoculation will be established sooner or later.

Free Medical Advice to Athletes

In the physical development research institute of Japan, attached to the educational department, an athletic medical consultation office has been opened. Any one who needs advice on physical training may have a medical examination free of charge. Sports and competitive games are prone to lead young people into some danger of overexertion. The office is in charge of Drs Saito and Shiraishi, the former being the chief of its internal medicine bureau, the latter of the surgical section. From the first day it was open, many athletes and players, both amateur and professional, visited the office to be examined, for this sort of medical advice has long been desired.

Personals

Dr K Futaki has retired from Tokyo Imperial University, where he held the chair of epidemic diseases.

Dr R Arima, an authority on tuberculosis, was decorated by the Hungarian government especially for the donation of his tuberculosis vaccine AO, which he presented while he was staying in Hungary last year.

Chian Sagara (1830-1909) was the first president of the Tokyo Imperial University and the director of its medical department. He adopted German medicine in this country for the first time. The present site of the Tokyo Imperial University was chosen by him. But he fell a victim to slanderous tongues and was obliged to retire from his high position. His after-life was miserable and he was forgotten. On the proposal of prominent people, including the war minister, Marquis Okuma and Viscount Dr Ishiguro, a monument will be erected to this benefactor of Japanese medicine.

Marriages

BYRON LUDWIG STEGER to Miss Delene Elizabeth Lobdell, both of Huntington, Ind., at Wabash, November 15.

THOMAS H TOMLINSON, Thomasville, N. C., to Miss Mary Sweeney of Baltimore, at Greensboro, November 16.

KUTCHER THREEFOOT KLEIN to Mrs Iva W Lovell, both of Meridian, Miss., at Jackson, in November.

CHARLES NEIL MCBRYDE, Ames, Iowa, to Mrs Virginia Abbey Swergard at Nashua, September 2.

JOHN M RENEHAN to Miss Helen O'Donnell, both of Ansonia, Conn., at Milford, November 6.

HAROLD D WALTZ, Denver, to Miss Eleanor Frances Bassett of New Orleans, November 29.

THOMAS ROBERT PLUMER, Trivoli, Ill., to Miss Helen Cornelius of Peoria, November 15.

WILLIAM WINSLOW WIEDEMANN JR to Miss Sue Amstutz, both of Toledo, Ohio, October 10.

IRVIN WILLIAM WILKENS, Indianapolis, to Miss Delta Newton of Clifford, September 16.

CLIFTON ROSS TITUS to Miss Mildred Carolyn Mitchell, both of Bassett, Va., October 7.

FREDERICK S WOLF, Baltimore, to Miss Betty Saunders Stern of New York, October 4.

FRANCIS J ROBBER, Willow Grove, Ohio, to Miss Elizabeth McGary of St. Louis, recently.

ROYAL V SHERMAN, Minneapolis, to Miss Elizabeth Alberts of St. Paul, November 18.

JAMES J MORROW, Austin, Minn., to Miss Ruth A Sargent of Red Wing, recently.

JOSEPH WEBB, Springfield, Ohio, to Miss Florence Barlow of Urbana, recently.

JACOB D PINSON to Miss Leah Freeman, both of Philadelphia, August 3.

HUGH WELLMEIER to Miss Helen H Frazier, both of Piqua, Ohio, October 11.

BURT HUBBARD to Miss Stella Carr, both of Lima, Ohio, recently.

MILTON PLOTZ to Miss Helen Ratnoff, both of Brooklyn, recently.

Deaths

Leon Dennis Pierce Clark of New York, University of the City of New York Medical Department, 1892, member of the Connecticut State Medical Society, the American Neurological Association, American Psychoanalytic Association, American Psychiatric Association and the Association for Research in Nervous and Mental Diseases, member and past president of the National Association for the Study of Epilepsy, American Psychopathological Association, New York Neurological Society and the New York Psychiatric Society, for many years on the staffs of the Manhattan State Hospital, Craig Colony for Epileptics and the New York City Children's Hospital, trustee to the Letchworth Village for Mental Defectives, Thiells, N. Y., author of "Clinical Studies in Epilepsy," "Psychohistorical Studies of Notable Historic Characters" and of numerous monographs on nervous and mental diseases, and co-author of "Diagnosis of Organic Nervous Diseases" and "Neurological and Mental Diagnosis", editor of *Archives of Psychanalysis*, 1926-1927, aged 63, died, December 4, of heart disease.

Frederick Adam Cleland, Toronto, Ont., Canada, University of Toronto Faculty of Medicine 1901, assistant professor of obstetrics and gynecology at his alma mater, member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, fellow of the American College of Surgeons, served as senior surgeon with the Canadian Expeditionary Force in Siberia on the staffs of the Toronto General Hospital, St. John's Hospital, Grace Hospital and the Women's College Hospital, aged 59, died suddenly, November 26, of heart disease.

William Le Moyne Wills, San Marino, Calif., University of Pennsylvania School of Medicine, Philadelphia, 1882, member of the California Medical Association, fellow of the American College of Surgeons, formerly professor of clinical surgery, University of Southern California College of Medicine, Los Angeles, at one time member and vice president of the state board of health for many years on the staff of the Children's Hospital, Los Angeles, aged 80, died, December 3.

David Thomas Bowden, Jr., Leonardtown, Md., Johns Hopkins University School of Medicine, Baltimore 1918, at one time assistant professor of epidemiology and public health, University of Oklahoma School of Medicine, Oklahoma City, served during the World War, formerly assistant state health officer in Oklahoma, health officer of Phelps County, Missouri, and St. Mary's County, Maryland, aged 41, was found dead, November 2, of heart disease.

Andrew Jackson Giesy, Portland, Ore., Jefferson Medical College of Philadelphia, 1882, member of the Oregon State Medical Society, emeritus professor of clinical gynecology, University of Oregon Medical School, at one time member of the city board of health, formerly on the staff of the Good Samaritan Hospital, aged 80, died, November 9, of heart disease.

Richard Frothingham, New York, Harvard University Medical School, Boston, 1892, member of the Medical Society of the State of New York and the American Laryngological Association, formerly assistant professor of otolaryngology, Columbia University College of Physicians and Surgeons, aged 67, died, December 5, of heart disease and pneumonia.

Karl Forbes Snyder of Freeport, Ill., Northwestern University Medical School, Chicago 1902, fellow of the American College of Surgeons, on the staffs of the Evangelical Deaconess, St. Francis and Freeport Methodist hospitals, aged 57, died, November 28, of a self-inflicted bullet wound.

Hartland Cyrus Johnson, St. Paul, College of Physicians and Surgeons of Chicago 1885, an Affiliate Fellow of the American Medical Association, aged 73, on the staff of St. Luke's Hospital where he died, November 26, of coronary thrombosis and hypertension.

David Autrey, Marietta, Okla., Memphis (Tenn.) Hospital Medical College 1900, member of the Oklahoma State Medical Association, past president of the Carter County Medical Society, formerly county health officer, aged 66, died, November 21, of heart disease.

Francis Regis Harrison, East Liverpool, Ohio, University of Pennsylvania School of Medicine, Philadelphia 1900, member of the Ohio State Medical Association, on the staff of the East Liverpool City Hospital, aged 54, died, December 3, of heart disease.

Ola Putman ☉ Marceline, Mo., Rush Medical College, Chicago, 1901, formerly secretary of the Linn County Medical Society, aged 55, proprietor of the B B Putman Memorial Hospital, where he died, December 4, of coronary thrombosis

Lamartine O Dudgeon, Sweetwater, Texas, University of Texas School of Medicine, Galveston, 1903, member of the State Medical Association of Texas, on the staff of the Sweetwater Clinic Hospital, aged 57, died, October 1

Henry Langholz, Oak Harbor, Ohio Northwestern Ohio Medical College Toledo, 1888, member of the Ohio State Medical Association, aged 74, died, December 8, in the Pool Hospital, Port Clinton of heart disease

Alpheus Hartley Wood, Emporia, Va Medical College of Virginia, Richmond, 1927, member of the Medical Society of Virginia, aged 35, died, September 28 of acute nephritis and pulmonary tuberculosis

Charles Elmer Park, Yuankiang, Yunnan, China, Chicago College of Medicine and Surgery, 1913, an Associate Fellow of the American Medical Association, medical missionary, aged 52, died, August 17

Homer Holcomb Knight, Detroit, University of Minnesota Medical School, Minneapolis, 1930, aged 28 on the staff of the Herman Kiefer Hospital, where he died, October 30, of pneumonia

Sigismund Emil Fredman, San Francisco, Imperial University of Jurjev, Russia, 1894, Imperial Military Medical Academy, St Petersburg, Russia, 1902, aged 62, died, August 9

Thomas Hamilton Burch, Ridgewood, N J, University of the City of New York Medical Department, 1880, aged 76, died, November 27, of cerebral hemorrhage and hemiplegia

James Madison Bannister, Snyder, Texas, Southwestern University Medical College, Dallas, 1907, served during the World War, aged 54, died, October 12, of heart disease

William B Johnston, Ellicottville, N Y, University of Buffalo School of Medicine, 1881, member of the Medical Society of the State of New York, died, October 23

Marquis Ernest Gilmore ☉ Fort Worth, Texas, Northwestern University Medical School, Chicago, 1900, aged 63, was killed December 2 in an automobile accident

M Josephine McChesney, Osceola, Neb, State University of Iowa College of Homeopathic Medicine, Iowa City, 1888, aged 82, died, November 10, of senility

Frederick H Snow, San Diego, Calif, University of Wooster Medical Department, Cleveland 1879, aged 79, died in November, of cerebral hemorrhage

Clement Tazwell Branch, Camden, N J Howard University College of Medicine Washington, D C 1900, aged 64 died, November 30, of heart disease

Robert Babcock, Albany, N Y Albany Medical College 1884, aged 76, died, December 8, of injuries received when he was struck by an automobile

Lorenzo T Potter, Jersey City, N J Chicago Medical College, 1880, aged 74, died, November 22 in New York, of carcinoma of the mouth

Isaac Noel Stowe, Atlanta, Ga Georgia College of Eclectic Medicine and Surgery, Atlanta 1893, aged 62, died September 7 of heart disease

William Harry Tatman, Bellaire Texas, Medico-Chirurgical College of Kansas City 1901, aged 64 died September 19

Theodore W Culp, Av, Ill Missouri Medical College, St Louis 1888, aged 68 died November 19 of myocarditis

William Jackson Cole, South Miami Fla, Medical College of Evansville Ind, 1877, aged 83 died, November 10

Andrew Adalbert Fabian, Larksville Pa Jefferson Medical College of Philadelphia 1915, aged 45 died November 2

Charles H Hubbard, Swarthmore Pa Hahnemann Medical College of Philadelphia 1883, aged 83 died November 12

Archibald E Beaton, Boston Baltimore Medical College 1896, aged 66 died November 23 of coronary thrombosis

Norman C Hunter, Laurinburg N C Medico-Chirurgical College of Philadelphia 1899, aged 58 died November 16

Andrew Patrick Owens, Texarkana Ark Louisville (Ky) Medical College, 1877, aged 85 died October 15

Howard Gray Martin, Los Angeles Cooper Medical College San Francisco 1902, aged 56 died October 20

Aubrey Horatio Staples, Oakland Calif Baltimore Medical College 1890, aged 59 died October 14

William Harrison Marshall, Mo St Louis Medical College 1874, aged 80 died September 18

Bureau of Investigation

AGAIN THE QUESTIONNAIRE NUISANCE

Franklin M Goodchild, M D, Turns His Attention from Soaps and Cooking Fats to Motor Cars

Time and again this department of THE JOURNAL has called attention to the plague of questionnaires with which the medical profession is afflicted. Let it be admitted that some responsibility for this condition rests on our profession, because so many of us, with easy-going tolerance, fill out such questionnaires instead of putting them in the ash-can where they belong. Most of these inquiries come from advertising agencies or their satellites. Their object is to get, at the expense of a postage stamp, an "expert opinion" that can be twisted in some way to sustain the "health angle" that the advertising agency wants to use in crying the wares of its clients. Occasionally the questionnaires come frankly from the advertising agencies themselves. These, at least, have the virtue of being above-board, even though the impertinence is not diminished. Many of them, however, are sent out under some high-flown name such as "Modern Research Society," "Medical Research Bureau," "National Research Bureau," or some similar appellation. Occasionally they come out under the name of an individual physician.

The latest questionnaire that has been sent to physicians in the past week comes from Dr Franklin M Goodchild, whose stationery carries the address Room 1516, 1250 Sixth Avenue, New York City. Dr Goodchild, according to the records of the American Medical Association was born in Philadelphia in 1891, holds a diploma from Columbia University College of Physicians and Surgeons, 1918, and a New York license of the same date. He is not a member of his local medical society or, of course, of the American Medical Association.

The files of the Bureau of Investigation disclose that more than three years ago—in March, 1930—Dr Goodchild was sending out a questionnaire on the stationery of one Percival White, which described Mr White as a "Research Counsellor" and Dr Goodchild as belonging to Mr White's "Medical Department." Incidentally, the Bureau of Investigation developed the fact that Percival White was one of the owners of an advertising agency known as White and Parton, Inc.

Percival White, through Dr F M Goodchild, was, it seems, interested in having physicians answer five questions relative to the alleged advantages "of the two distinct classes of soap—white soap and colored soap." This calls to mind a similar questionnaire sent out in January, 1929, by the editors of the *Medical Review of Reviews* who wanted to know of physicians whether they recommended white or colored soap, and those that are perfumed or those that are free from odor. This particular questionnaire was referred to in an article on the subject appearing in this department of THE JOURNAL, March 23, 1929.

Dr Goodchild in his letter of March 4, 1930, stated that it was his intention to make public "through the daily press and other mediums" the results of his survey of white and colored soap. Sure enough it was only a few weeks later that there emanated a mimeographed statement sent broadcast to publishers and headed "Physicians Draw Color Line in Soap—White Soap Triumphs Over Colored in National Survey." Then followed a two-and-a-half page article written in the most approved inquiring reporter style and said to be Authorized by F M Goodchild M D, 25 West 45th Street, New York City. (this was the address of Mr Percival White of White and Parton Inc.) Dr Goodchild's "story" was to the effect that he had received replies on the subject of white and colored soap from 205 physicians and nurses although just what proportion of the 205 were physicians and what proportion were nurses was not stated. On this group described as medical authorities, 199 reported that they had noticed foreign matter in colored soap while they had found white soap generally free from it while only six of the same group reported that they found no harmful ingredients in colored soap.

Dr Goodchild's article stated further that "most of the health officers and physicians who expressed themselves believed that colored soap predominated in producing harmful effects," such effects including dehydration dermatitis or other skin trouble, roughness, dryness or chapping. The white soap, on the contrary, was not observed to disturb the skin. In order doubtless, to lend an air of verisimilitude to an otherwise bald and unconvincing statement, Dr Goodchild gave the names and addresses of forty-nine persons who he claimed had favored white soap among these were several physicians who hailed from various parts of the United States. From the east there were six physicians listed, coming from the states of New York, Maryland (two), Vermont, Rhode Island and Ohio. In the middle west nine physicians succumbed to the questionnaire—three from Illinois, two from Michigan, three from Missouri and one from Indiana. Only two states in the west furnished men who answered Dr Goodchild's letter: California and Colorado. These, with one physician from West Virginia, completed the list. The remaining names out of the forty-nine given were those of laymen, some of them alleged to be registered nurses, others superintendents of hospitals, sanatoriums and infirmaries. Summed up according to Dr Goodchild's release, one hundred and sixty-three medical authorities were said to have registered themselves in favor of white soap and only seven for colored. Which must have been very satisfactory for Dr Goodchild or Mr White.

As already stated, Dr Goodchild's interest in the question of the color of soap seemed to extend from March 1930 until May 1930. By October 1930 this inquiring medical reporter had turned his attention to cooking fats, with the very obvious effort to accumulate data to prove that vegetable fats are superior to animal fats for cooking purposes. This time Dr Goodchild's questionnaire was sent on stationery bearing his name and not that of Mr White. However the address was 25 West 45th Street, the address of Percival White and White and Parton Inc. Was it a case of "the voice is Jacob's voice, but the hands are the hands of Esau?" Dr Goodchild's vegetable-fat questionnaire went, in addition to physicians, also to those connected with educational institutions such as those in charge of home economics departments of universities and colleges. The leading character of the doctor's questions can best be brought out by quoting verbatim one or two of them.

Do you agree that vegetable fats are more wholesome than animal fats because they are cleaner and sweeter and do not so readily undergo decomposition changes?

Do you agree or disagree with that medical opinion frequently expressed that vegetable fats are more digestible than animal fats?

In your opinion are there certain diseases in which a vegetable diet is very important? If so, is gastric ulcer one of them and what others could you mention?

Just what results Dr Goodchild got in his vegetable-fat questionnaire, we do not know, as we were not favored with any mimeographed or other material sent out either by Dr Goodchild or his employers—if any—on the subject.

Two years later, in October, 1932, Dr Goodchild had returned to his first love, soap, and was again circularizing physicians, particularly dermatologists. The doctor was still using stationery bearing his name, but his address had changed from 25 West 45th Street to 130 West 42d Street. From the letter sent to physicians, it appears that Dr Goodchild was greatly concerned over the fact that "the claims of certain soaps for medicinal and antiseptic qualities are greatly exaggerated." He gave it as his opinion, and it is an opinion that all rational people will agree with, that the main function of soap is to cleanse. This was the doctor's thesis and "in the interests of enlightening the public on the real facts," he was writing to the various physicians and "other leaders in the field" not, it seems, in order to get an unbiased expression of opinion but as he admitted in the introduction to his questionnaire, to obtain authoritative confirmation of the thesis already laid down. Here again the doctor's questions were strictly leading in character, thus:

Do you agree that all soaps have antiseptic action regardless of the addition of any special ingredients?

Do you agree that the main function of soap is to cleanse, not to cure?

Do you agree that to be suitable for general daily use a soap should be pure, mild and neutral?

Just how many replies Dr Goodchild got and whether they fitted in with the problem that he had, we have no means of knowing. We do know that one well-known dermatologist in the east notified Goodchild very properly that when he gave expert opinion to reputable commercial concerns, he always charged an adequate fee for such work.

In his present questionnaire, Dr Goodchild abandons what might be called the chemical field—soap and vegetable fats—and enters the mechanical field—motor cars. He is still writing on stationery that carries his name, but the present address given is Room 1516, 1250 Sixth Avenue, New York City. He writes to the physician and asks him, "as a leader in your field for his views on the individual springing of automobile wheels or knee action," as it is sometimes called." Dr Goodchild then goes on to state the various alleged good points on this improvement in motor car construction recently pioneered in by General Motors. After detailing the virtues of the improvement—presumably with the idea that the recipient of his letter may realize that Dr Goodchild wants a favorable report—the doctor states that he is "personally much interested in this development" and asks the doctor to whom he writes whether he does not "agree that this development is worthy of approval." He closes his letter with the statement that unless the physician to whom he writes advises to the contrary, he plans to use the physician's name and statements for publication, "along with those of other leaders."

After this article was in type and ready to go on the press, the Bureau of Investigation learned that Dr Franklin M. Goodchild is conducting his "survey" in connection with the so-called knee-action in motor car construction for Mr Percival White, marketing counsellor, 1250 Sixth Avenue, New York City.

Correspondence

PRODUCTION OF ENDOMETRIAL GROWTH IN CASTRATED WOMEN

To the Editor.—In the discussion of our second experiment described under the title "Production of Endometrial Growth in Castrated Women: The Minimum Dosage of Theelin That Is Required" (*THE JOURNAL*, November 4, p. 1466), Dr Emil Novak states that the method has been used, as Dr Werner and Dr Collier know, particularly by Clauberg and Kaufmann in Germany.

The statement by Dr Novak is ambiguous. While we were the first to produce the growth phase and uterine bleeding among other phenomena, in the uterus of castrated women by the use of theelin, one might infer from his discussion that this is not the fact. We believe that Dr Novak did not intentionally wish to leave this impression. We feel that he wished to convey the fact that Dr Kaufmann has also done work of this nature and has produced the premenstrual endometrium but not until after we had completed and published an account of our work with theelin in a preliminary report in the *Proceedings of the Society for Experimental Biology and Medicine* in June, 1932.

As proof of the foregoing statement regarding the priority of our work, we cite the article of Dr Kaufmann published in the *Zentralblatt für Gynäkologie* in October 1932 in which he reports four experiments performed by him:

EXPERIMENT 1.—In 1928 he injected 2,320 mouse units of folliculin into a castrated woman over a period of twenty-two days. He states as a result of this treatment that he was unable to demonstrate any effect on the endometrium of this patient.

EXPERIMENT 2.—In 1930 he injected 21,500 mouse units of Brunsthormon over a period of thirty-two days and 42 units of corpus luteum hormone. He states that curettage following this experiment failed to show any endometrial effect.

EXPERIMENT 3.—In February, 1932, he injected 100,000 units of progynon benzoate in a period of ten days. He states that again he was unable to produce a functioning endometrium.

EXPERIMENT 4—In June 1932, he injected 10 000 units of progynon benzoate daily for twenty-one days (total 210 000) this was followed by seven daily injections of 5 rabbit units of corpus luteum hormone. He was successful in producing a premenstrual endometrium for the first time by this experiment.

As regards work by Carl Clauberg, an article was published by him in the *Zentralblatt für Gynäkologie*, Oct 8 1932, entitled 'The Action of the Luteal Hormone the Specific Hormone of the Corpus Luteum, on the Human Uterus'. In this article he remonstrates with Dr Kaufmann for having claimed priority, but he admits not having published his work up to that time.

In contrast to this work by Kaufmann, we began our first experiment, Jan 10, 1932, using five castrated women, four of them with intact uteri, while Kaufmann used one castrated woman. During the first twenty-eight day period each patient received 200 Allen-Doisy rat units of theelin daily. Curettements were done before beginning treatment and each week thereafter for three weeks. At the end of two weeks we were able to show marked endometrial growth in all four patients and uterine bleeding during and at the end of the experiment.

This experiment was completed April 22 1932, and reported at the St Louis University seminar in May, 1932, a preliminary report was published in the *Proceedings of the Society for Experimental Biology and Medicine* in June, 1932, at which time Kaufmann was beginning his first successful experiment on one castrated woman, the report of which was not published until October, 1932. Our complete report was accepted for publication in *THE JOURNAL* in September, 1932, and published in *THE JOURNAL*, March 4, 1933.

AUGUST A WFFNER, M.D.,
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USE OF ERGOT TO CONTRACT CAPILLARIES IN PURPURA

To the Editor—Recently we have had a patient at Grady Hospital suffering from thrombocytopenic purpura hemorrhagica, probably resulting from intravenous arsenic. He was bleeding continuously from the mucous membranes. There were many large purpuric spots over the body surfaces. The blood examination revealed 2 000 000 red blood cells, 5 000 white blood cells, 65 000 platelets and clot retraction sixty minutes plus.

Repeated transfusions gave temporary support yet it seemed that he would bleed to death in spite of all medication.

Finally we administered to him ergot in 1 drachm doses every four hours and solution of pituitary 0.5 cc hypodermically. Following the first two doses of ergot and one hypodermic of pituitary the bleeding diminished. After twenty-four hours slight bleeding again occurred. The medication was repeated another transfusion was given, and after this his recovery was rapid and progressive. He is now well.

The ergot and solution of pituitary were suggested by me because I have long felt that the pathologic physiology must be intimately related to the capillary bed as well as to the platelet deficiency. It is a well known fact that cessation of hemorrhage depends on the contraction of the vessel wall in connection with other factors. It seemed reasonable that if the capillary walls could be contracted the bleeding might be stopped and to do this the ergot and the solution of pituitary were used. In this case in fact the result was gratifying. It may be that there is some equal ratio between capillary contraction and platelet efficiency—that is a widened capillary plus deficient platelets would inhibit the hemorrhage defense, whereas a contracted capillary would be enabled to function even with a slight platelet

This letter is written so that you may describe this method of treatment for the benefit of other physicians who have such cases. I am anxious to know whether others obtain similar results from this procedure.

Heretofore, these patients have been treated with transfusions and other supportive measures. A few spleens have been removed. The mortality has been most discouraging.

The pharmacologists seem to be in dispute as to whether ergot contracts the capillaries or not. It is agreed, however, that the smaller vessels with muscular walls are affected. This may in time aid in contracting the smaller terminals. Solution of pituitary is believed to contract the smaller arterioles and capillaries.

JACK C NORRIS, M.D., Atlanta, Ga

Pathologist, Grady Hospital

HISTORICAL ASPECTS OF ENZYME INVESTIGATIONS

To the Editor—*THE JOURNAL* has presented an editorial discussion of the historical aspects of enzyme investigations (The Centenary of the Discovery of Diastase, November 11 p 1564) which I have read with great interest. Certainly all workers in this field are pleased to see the emphasis placed on the application of this study to the basic medical sciences.

Priority as regards the first scientific description of enzyme activity is apparently not a matter of general agreement and I should like to call attention to some early observations that are quite commonly overlooked. Practically all books on the subject, for instance, place the priority with Dubrunfaut and with Paven and Persoz in 1830 and 1833, respectively, and this has naturally been accepted in the editorial mentioned. The first description of a practical preparation of an active 'diastase' product was, no doubt, that by Payen and Persoz. However, in referring to the first observation of enzyme activity, usually no reference is made to the report by G S C Kirchhoff, read before the Royal Academy of St Petersburg in 1814, 'Ueber die Zuckerbildung beim Malzen des Getreides, und beim Bebruehen seines Mehls mit kochendem Wasser' (*J f Chemische Physik*, Schweigger's, Nuremberg 14 389-398, 1815). An English abstract of this report was as follows:

A glutinous constituent is separated from wheat meal by washing and is mixed with a paste of potato starch. The pasty stiffness soon disappears and a sugar is formed. The yield of sugar is markedly affected by the experimental temperature a temperature of 50 to 75 appearing most favorable. The syrup has the sweetness of malt syrup is fermentable and is partially soluble in alcohol. The soluble component crystallizes from alcohol in very small white crystals. The insoluble component dissolves in water is not precipitated by an infusion of nutgalls and appears to be a modified form of starch. The active glutinous material is almost entirely recovered by filtration. The filtrate is capable of partially converting a fresh quantity of starch. Dilute sulphuric acid completely prevents conversion of starch by the gluten. KOH also deprives the gluten of its activity. Concludes that the formation of sugar in malt is explained and that a starch-sugar transformation is a necessary step in the alcoholic fermentation of amyloseous materials.

This article can be interpreted to include the aspect of separating a crude enzymic agent, a recognition of its catalytic nature and a rough description of its optimum conditions of activity. Although I have emphasized this priority in two books, *A Comprehensive Survey of Starch Chemistry* and *Enzyme Action and Properties*, it has not been recognized by some subsequent books on the subject. This is probably not based on any discrimination or conflicting interpretation but merely on the relative inaccessibility of the reference in question. Apparently the only available set of this journal is in the New York Public Library, at least in America.

Having spent a good deal of time on this point I was interested to note that priority was really given to Kirchhoff in 1815. I cited this in my 1st ed 1850 or 1875 and after that

the more ready accessibility of the references to Dubrunfaut and Payen and Persoz simply displaced the priority due Kirchhoff

Again may I emphasize my agreement with the spirit and general context of the editorial mentioned

ROBERT P. WALTON,
Tulane University School of Medicine,
New Orleans

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

SENSITIZATION TO NEOARSPHENAMINE

To the Editor—A woman aged 35 acquired syphilis and came to me with a secondary rash condylomata and a 4+ Wassermann reaction. I gave her 0.3 Gm of neoarsphenamine the first time and 0.45 Gm the next. The night of the second injection she had chills and fever which recurred daily until a morbilliform rash appeared five days later. I then put her on 0.5 Gm of sodium thiosulphate every two days and the rash is almost gone. I am asking you for a complete outline for her further treatment. Shall I turn to bismuth and how much shall I give? May I ever use neoarsphenamine again and if so in what dosages? Is mercury indicated and if so in what form and dosages? Please answer this as soon as possible as I would like to continue this treatment without delay. Kindly omit name.

M D Pennsylvania

ANSWER—It is impossible to be sure at present whether this patient has been permanently sensitized against neoarsphenamine. Morbilliform rashes may or may not be the precursors of an exfoliative dermatitis and an expression of permanent sensitization. In view of the fact that the patient has a recent syphilitic infection, it is of the utmost importance to determine this point as promptly as possible, if she is not permanently sensitized, the total duration of her treatment may be much shorter and the hope of an ultimately successful outcome much better than if treatment must be carried on with the heavy metals alone.

There should be no interruption in the continuity of treatment because of this reaction; intramuscular injections of bismuth salicylate, 0.2 Gm suspended in oil, should be started at once and continued weekly for six weeks. Toward the end of this course of bismuth therapy the sensitivity of the patient for the arsphenamine (including arsphenamine and silver arsphenamine as well as neoarsphenamine) should be tested by means of a patch test (technic described by Schoch, *THE JOURNAL* April 16, 1932, p 1367). If this test is positive (erythema and vesiculation appearing in the tested area in from twenty-four to forty-eight hours), no further arsphenamine may be administered at any time, the patient is permanently sensitized. While a positive patch test indicates sensitization however, a negative test does not exclude it. Further work with the test has shown that not infrequently it may be negative in an individual who is definitely known to be sensitive.

If the patch test is negative, sensitivity should be tested by cautious intravenous testing. For this purpose, a different arsphenamine product from that originally used should be chosen since in a few instances, sensitization may be actually drug specific rather than group specific. In this instance, silver arsphenamine is the drug of choice for this purpose. The initial dose should be minute—25 mg (0.025 Gm). The patient should be carefully observed and interrogated for the possible appearance of four phenomena: generalized itching in the absence of a skin rash; the appearance of any skin eruption; fever and malaise—a knocked-out feeling out of proportion to the size of the dose administered. If any of these phenomena are present sensitization may be assumed and the arsphenamines must be permanently discontinued. If none of them are present the dose may be cautiously increased each week by equally small increments (0.025 Gm), until either evidences of toxicity appear or an average therapeutic dose is reached. Thus it will take about ten weeks of careful dosage increase—0.025, 0.05, 0.075, 0.1 Gm, and so on—to attain the therapeutic dose of silver arsphenamine of from 0.2 to 0.3 Gm. The appearance of toxic phenomena (itching, dermatitis, fever, prolonged malaise) at any time is a signal for the end of all attempts at arsphenamine therapy.

During this course of intravenous testing, it is desirable also to perform frequently repeated leukocyte and differential counts. Leukopenia especially if accompanied by a decrease in granulocytes is a warning of impending serious trouble so also is eosinophilia, even if the total white count remains normal.

If either the patch test or the cautious intravenous test already described shows that the patient is sensitized, further treatment must consist of the heavy metals alone. These also should be given continuously if possible, the best method being courses of intramuscular injections of an insoluble bismuth salt, preferably the salicylate alternating with courses of mercury byunction. Under these circumstances the total duration of treatment must be a minimum of three years instead of the average of from fifteen to eighteen months if an arsphenamine can be used.

The spinal fluid should be tested as a routine in any case at the end of about six months of treatment. Should it prove to be positive, it is worth while noting that arsphenamine sensitive patients may be given tryparsamide, a pentavalent drug especially valuable in neurosyphilis, without danger of producing dermatitis.

Incidentally, some workers feel that sodium thiosulphate is of no value whatever in poisoning with the arsphenamines or with other metals. Calcium is probably much more effective.

TENDON TRANSPLANTATION AFTER CUTTING POSTERIOR INTEROSSEOUS NERVE

To the Editor—Assuming that the posterior interosseous nerve is cut at a point about two inches below the radial head or at the radial head is there any tendon transplantation operation or any operation that will restore extension at the metacarpophalangeal joints and phalanges? Please omit name.

M D New York

ANSWER—The subject of peripheral nerve injuries and their treatment received a great stimulus during the World War from the efforts of Sir Robert Jones, Sir Harold Stiles, C. L. Starr, Arthur Steindler, Harry Platt, Dean Lewis, Delageniere, Walther, Tinel and Binesty.

Failures or partial failures after operations on the musculospiral nerve have been successfully treated by tendon transplantation. The operation of Sir Robert Jones of Liverpool consists in the transplantation of the (1) pronator radii teres into the extensores carpi radiales longior and brevior, (2) flexor carpi ulnaris into the extensor communis digitorum and extensor longus pollicis, (3) flexor carpi radialis into the extensor ossis metacarpi pollicis and extensor brevis pollicis.

The results of this operation are striking, a useful and strong hand being obtained—a hand that can be utilized for most of the ordinary occupations. On page 18 of his little book called 'Notes on Military Orthopaedics,' published by Cassell & Co Ltd, London, Sir Robert Jones states that in cases of musculospiral injury the uncontrolled action of the flexor group causes the fingers to curl into the palm and the hand to become useless. In such a case (a) the flexor carpi radialis and the flexor carpi ulnaris can be transplanted into the paralyzed extensor of thumb and fingers and, (b) in addition, the pronator radii teres may be sutured to the two radial extensors.

Jones recommended transplantation of the pronator radii teres and the radial and ulnar flexors in musculospiral paralysis and describes the technic as follows: With the forearm midway between pronation and supination an incision is made along the radial border of the forearm in its middle third. Under cover of the tendon of the supinator longus the pronator radii teres will be found where it becomes inserted into the outer border of the radius. From this it is detached and is then inserted into the tendons of the extensor carpi radialis longus and brevis which lie closely applied to it on the dorsal surface.

A horseshoe incision, with the convexity resting on the back of the carpus with the two straight sides extending along the radial and ulnar borders, is now made. Through the lateral aspects of this incision the tendons of the carpi ulnaris and radialis are identified and are detached from their insertions as near the carpus as possible.

The tendons are brought round the ulna and radius respectively in a very slanting fashion and are then attached to the extensors of the fingers and thumb: the flexor carpi ulnaris being attached to the extensor longus digitorum tendons of the three inner fingers and the flexor carpi radialis to those of the thumb and index finger.

When the lesion is below the origin of the posterior interosseous nerve, the radial extensors of the wrist are intact and the transference of the pronator radii teres is of course, unnecessary. Stiles modified the original operation by inserting the tendon of the palmaris longus into the extensor pollicis longus, the flexor carpi radialis into the extensor primi internodii pollicis and the extensor ossis metacarpi pollicis, and the flexor carpi ulnaris into each of the extensor digitorum tendons. The hand is immobilized for two weeks in dorsiflexion, the wrist being kept almost at a right angle and the metacarpophalangeal and interphalangeal joints being only slightly palmar flexed.

to avoid subsequent stiffness. The after-treatment consists of daily massage and electrical stimulation. Recovery is usually complete in from eight to ten weeks, and the position of extension must be maintained until there is return of voluntary function.

The following books and articles may be consulted for further details:

- Campbell W C. A Text Book on Orthopedic Surgery. Philadelphia W B Saunders Company 1930.
Jones Robert. Tendon Transplantation in Cases of Musculospiral Injuries Not Amenable to Suture. *Am J Surg* 35 33a (Nov) 1921.
Stiles H J. Operative Treatment of Nerve Injuries. *Am J Orthop Surg* 16 351 (June) 1918.
Steindler Arthur. Operative Orthopedics. New York D Appleton & Co 1925 p 89.
McMurray T P. *J Orthop Surg* 1 125 (March) 1919.

PERTUSSIS VACCINE

To the Editor—What is the value of pertussis vaccine as a preventive measure and as a measure for reducing the severity of the attacks? Which vaccines can be counted on as reliable? Please omit name.

M D Rhode Island

ANSWER—There is considerable difference of opinion among physicians with regard to the value of pertussis vaccine either as a preventive or as a therapeutic measure. Many believe that pertussis vaccine prepared entirely from the Bordet bacillus is a distinct aid as a prophylactic. Some of the vaccines used for the treatment of whooping cough are termed 'pertussis combined' and contain, in addition to the Bordet bacillus, staphylococci, streptococci, pneumococci, influenza bacilli and Micrococcus catarrhalis. Though many physicians favor the use of vaccine in the treatment of whooping cough, there seems to be little doubt based on numerous reports and investigations that have been carried on in the past that the average stock vaccine supplied for the treatment of this disease exerts little, if any, influence on the course during the paroxysmal stage.

PHYSIOLOGIC BASIS FOR HYPERACTIVE CHILD

To the Editor—Can you give me any information regarding the physiologic basis for the overactive or hyperactive child? Please omit name.

M D Rhode Island

ANSWER—A physiologic basis for the overactive or hyperactive child may be sought in the autonomic nervous system, the endocrine glands or the constitutional makeup of the individual. Existing knowledge of the physiologic regulation of the vegetative nervous system is in a highly speculative state. However, in many of these overactive children an accompanying increased salivary gland secretion, increased intestinal motility and vasomotor instability can lead one to suspect a hyperactivity in the autonomic system. The relation of the endocrine glands to overactivity in children is founded on better known physiologic facts. The influence of the thyroid secretion as, for example, the hyposecretion in cretinism with accompanying dullness and sluggishness, and the overactivity of the hyperthyroid are examples of knowledge in this field. The endocrine influence in the growing child especially at the time of puberty, is well known. A physiologic increase in systolic blood pressure at this period often to astonishingly high values, is based on physiologic endocrine influence. The constitutional factor is most important. Overactive children are most often the offspring of highly strung emotional unstable parents. A child who inherits an unstable nervous system or a temperamental emotional disposition can hardly be expected to be dull, inactive and phlegmatic in his reaction. Environment also may tend to produce or aggravate overactivity. Calm placid surroundings constitute the ideal environment for every child. A child with an overactive tendency will show more pronounced and aggravated symptoms in the overactive direction in a disturbed and turbulent home life.

THERAPEUTICS OF CALCIUM

To the Editor—What are the more common indications for calcium therapy at the present time? Please omit name.

M D Rhode Island

ANSWER—Calcium carbonate is employed as a vehicle for antacid action.

Calcium is employed as a vehicle for ions with a systemic reducing tendency, e. g. calcium chloride as a diuretic.

Calcium is used to prevent calcium impoverishment of the system, for example in pregnancy and lactation and in childhood unless the calcium is taken in the form of milk (1 quart daily).

In the treatment of acid diarrhea, calcium carbonate not only neutralizes the acid and thus checks the irritant but also

raises the amount of calcium available for absorption, which may be of importance in celiac disease of infants and sprue in adults.

In tetany and spasmophilia there is a deficiency in available calcium ions owing to alkalosis or parathyroid deficiency. Hence calcium administration is of but temporary value in these conditions, unless the alkalosis or parathyroid deficiency is simultaneously corrected.

The results from calcium salts in inflammatory and non-inflammatory effusions and edemas is generally disappointing, unless the ionization of calcium is at the same time increased, as it may be by the intravenous injection of calcium chloride. Simultaneous salt restriction seems to be especially important for results in tuberculous effusions.

While calcium cannot in general, be relied on to increase the coagulability of the blood, it may do so in certain conditions, as in the bleeding tendency of the icteric.

The local use of calcium in the form of lime water or of chalk exerts a very mild astringent effect.

STRICTURE OF THE CERVIX WITH HEMATOMETRA

To the Editor—A single woman aged 24 with a normal genital history up to three years ago when she had gonorrhea presented herself today with an amenorrhea of two months. She suspected a pregnancy. During her gonorrheal infection she apparently had had some form of thermal cauterization of the endocervix. She was under treatment for about six months and was discharged as cured. Since her gonorrhea she has menstruated every twenty-eight days up until two months ago but has had an increasing dysmenorrhea. On examination I found her to be normal in every way except that the external os was completely bridged over by epithelium—not the slightest opening could be found. What if any will be the effect on the general health of this individual so long as the occlusion is permitted to remain? Will nature as a result of the occlusion abstain from having her ovulate? Please omit name.

M D, Wisconsin

ANSWER—The patient is probably not pregnant but should have an Aschheim-Zondek test to determine this with certainty. The trouble is apparently a stricture of the cervix complicated by hematometra. In the absence of pregnancy, a thorough dilation of the cervical canal is imperative. Otherwise the backpressure of retained menstrual blood will cause hematosalpinx and generalized pelvic inflammation. Ovulation will not cease but sterility usually occurs in these cases unless the stricture is overcome during the early months.

RELATION OF NASAL OBSTRUCTION TO HEART DEFECT

To the Editor—A girl aged 3½ years has had one attack of rheumatic heart disease, has an autumnal hay fever and has frequent colds. Her tonsils and adenoids do not appear to be enlarged. However the septum of her nose deviates markedly to the left at the level of the upper edge of the lowest turbinate bone. The obstruction is so great that even when well she has difficulty in breathing through her nose. She awakens at night frequently because of inability to get her breath but she never breathes through her mouth. The hay fever aggravates the condition greatly. Will not the difficulty in breathing in time damage her already slightly weakened heart? Under the circumstances is operation to straighten the septum advisable? What sort of operation should be done? Please omit name.

M D Michigan

ANSWER—The marked difficulty in breathing is not likely to impair a slightly weakened heart, although it may be distressing from the standpoint of both the patient and the parents. The size of the adenoids should be estimated by finger palpation and judgment drawn not only from the actual size of the adenoid mass but from a comparison between its size and that of the nasopharynx. A small adenoid will markedly block a small nasopharynx and its removal by the same token will much improve the breathing. As to the additional troubles imposed by the deviated septum, a child whose difficulties are as great as those described might, in the opinion of many good men be submitted to a septum operation. Such operations are not frequent of course but from time to time they do occur. As the deviation in these instances is frequently anterior and cartilaginous in nature the removal of just the offending piece of cartilage may solve the whole problem, no more tissue being taken out than is absolutely necessary. A skillful operator may avoid removing any cartilage by incising it in such a fashion that it may be swung into proper position and allowed to remain in place. A cautious procedure would consist in first removing the adenoid mass, proceeding to the septum operation only if this fails to give relief.

The frequent cold must be considered a cause of nasal obstruction as this may be due to sinusitis with secretion or to a perennial hay fever or vasomotor rhinitis and the possibilities should be disposed of before surgical intervention is attempted.

RETARDATION OF DEVELOPMENT OF GENITALIA

To the Editor—Thirteen months ago a boy was born as the second child to two healthy parents. The child has developed normally to the present time. A matter of concern both to the parents and to myself is the small size of the penis which protrudes hardly noticeably. Circumcision was performed at 1 week of age revealing the normal glans penis. There seems to be no evidence of hermaphroditism. My prediction is that this will maintain its proportional size that it is more a congenital deformity than a glandular deficiency. Can you throw any light on this subject? Please omit name.

M D Tennessee

ANSWER—The condition referred to is often combined with delayed descent of the testicles, which phenomenon should be investigated. Besides individual variations retardation of development corrects itself frequently with the natural growth of the child. The same holds good in a great many instances with the spontaneous descent of the testicles. Some observers report that in the second year of childhood both these conditions are favorably influenced by the injection of compounds derived from the anterior half of the pituitary body. These compounds may be obtained from any medical supply house.

X-RAYS OR RADIUM IN UTERINE HEMORRHAGE

To the Editor—In the hands of experts which has proved the safer measure to use in uterine bleeding of a young woman x-rays or radium? Please omit name.

M D New York

ANSWER—A few men employ small doses of radium for bleeding but the x-rays and radium both cripple the ovaries and on this account most gynecologists do not favor their use in women under 40. Keene gives 100 mg for not longer than five or six hours, with the thought that the ovaries will not be permanently injured by this small dosage and produces temporary amenorrhea in this way. Those who are less enthusiastic over fractional doses of radium do not, as a rule, favor the x-rays but prefer recourse to operation in case simple palliative measures are of no avail.

Provided ray therapy has been decided on radium is usually given preference over the x-rays, first because a diagnostic curettage may be performed at the same time, and this is usually essential and also because radium is more direct and more localized in its action and the dosage can be accurately gaged.

HIGH BASAL METABOLIC RATE

To the Editor—Please tell me what a metabolism test of plus 17 for a girl aged 8 means. Please omit name and address.

M D South Carolina

ANSWER—A basal metabolism reading of plus 17 for a girl, aged 8 years, must be interpreted with a great deal of caution. Even when such variables as cooperation and emotion have been ruled out, it must be remembered that this result is not much outside the limits of normal variation. It is well to recalculate such a result on the basis of more than one of the prediction standards available for that sex and age. These standards may yield results in a particular case which differ from each other by more than the reading obtained here. This is partly due to the different criteria on which these standards are based, partly because of the fact that there may occur real differences in temporal and physiologic age and partly because during that decade small differences in age may have great influence on the metabolic rate. In cases like this the basal metabolic rate by any one prediction standard may be useful as a guide to the progress of the case or to the effect of treatment. It should not, however, be allowed to outweigh the clinical diagnosis.

TENDER FEET

To the Editor—A man aged 71 suffers a great deal from tender feet. While he was in the railway service about thirty five years ago both of his feet were frozen but on reaching the hospital his feet were immersed in ice water and he suffered no sloughing or bad after effects. Since that time his feet have been exposed to extreme cold but never frozen. He does not complain of pain unless pressure is applied but of extreme tenderness. Will you please suggest applications that will toughen the skin on his feet? Please omit name.

M D, Oklahoma

ANSWER—The probability is that the trouble is circulatory. Are the feet cold and can a normal pulse be felt in the dorsalis pedis and posterior tibial arteries? Hot foot baths should be followed by the application of an oil. The French advise the use of cod liver oil for this purpose, combined with the administration of small doses of iodides internally. Massage should be done upward with the oil as the patient can stand it. Tobacco should not be used. Loose fitting shoes and wool socks should be worn. A galvanic foot bath for from ten to fifteen minutes several times a day may be helpful.

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery Jan 9 13 Sec Dr J N Baker, 519 Dexter Ave Montgomery

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Groat B Candidates)* The examinations will be held in various cities of the United States and Canada April 7 Sec, Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Cleveland June 11 Sec Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Cleveland June 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

ARIZONA Phoenix Jan 23 Sec Dr J H Pitter on 320 Security Bldg Phoenix

COLORADO Denver Jan 2 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT *Basic Science* New Haven Feb 10 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven

DISTRICT OF COLUMBIA Washington Jan 8 9 Sec Dr W C Fowler 203 District Bldg Washington

HAWAII Honolulu Jan 8 11 Sec Dr James A. Morgan 48 Young Bldg Honolulu

ILLINOIS Chicago Jan 23 25 Supt of Regis Dept of Regis and Edu Mr Eugene R Schwartz Springfield

MINNESOTA *Basic Science* Minneapolis Jan 23 Sec Dr J Charnley McKinley 126 Willard Hall University of Minnesota Minneapolis *Regular* Minneapolis Jan 16 18 Sec Dr E J Engberg 350 St Peter St St Paul

NATIONAL BOARD OF MEDICAL EXAMINERS The examinations will be held at centers in the United States where there are five or more candidates Feb 14 16 May 7 9 June 25 27 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEBRASKA *Basic Science* Lincoln Jan 9 10 Dir Bureau of Examining Boards Mrs Clark Perkins State House, Lincoln *New York Albany Buffalo New York and Syracuse Jan 29 Feb 1* Chief Professional Examinations Bureau Mr Herbert J Hamilton Room 315 Education Bldg Albany

NORTH DAKOTA Grand Forks Jan 2 Sec Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OREGON Jan 24 Sec Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia Jan 26 Sec Mr W M Denison 100 Education Bldg Harrisburg

RHODE ISLAND Providence Jan. 45 Dir Dr Lester A. Round 319 State Office Bldg Providence

SOUTH DAKOTA Pierre Jan 16 17 Dir Dr Park B Jenkins Pierre

VERMONT Burlington Feb 7 9 Sec Dr W Scott Day Underhill

WASHINGTON *Basic Science* Seattle Jan 11 12 *Regular* Seattle Jan 15 16 Dir Mr Harry C Huse Olympia

WISCONSIN Madison Jan 9 11 Sec Dr Robert E Flynn 401 Main St LaCrosse

WYOMING Cheyenne Feb 5 Sec, Dr W H Hassed, Capitol Bldg Cheyenne

Ohio June Examination

Dr H M Platter secretary, Ohio State Medical Board, reports the oral written and practical examination held in Columbus, June 6-9, 1933. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two hundred and forty-two candidates were examined, 238 of whom passed and 4 failed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1933)	83.6	85.9
Rush Medical College	(1933)	85.1	
Indiana University School of Medicine	(1933)	85.2	
University of Louisville School of Medicine	(1933)	82.6	82.7
Harvard University Medical School	(1931)	84.2	
85.9 (1933) 87			
Tufts College Medical School	(1932)	81.8	
University of Michigan Medical School	(1932)	81.2	
University of Rochester School of Medicine	(1932)	85.0	
(1933) 80.7			
Ohio State University College of Medicine	(1933)	76	
76.4 78.4 79.2 79.3 79.4 79.9 80 80.1 80.2 80.2			
80.2 80.4 80.5 80.6 80.6 80.9 80.9 81.1 81.2 81.3			
81.3 81.4 81.4 81.5 81.6 81.6 81.8 82 82.2 82.3			
82.3 82.3 82.4 82.4 82.4 82.5 82.6 82.6 82.6			
82.6 82.8 82.9 83 83.1 83.1 83.2 83.2 83.2 83.3			
83.3 83.3 83.4 83.4 83.5 83.5 83.6 83.8 83.8			
84 84.4 84.7 84.8 84.8 85 85.1 85.1 85.1 85.7			
85.8 85.8 85.9 86 86.1 86.3 86.4 86.7 86.8 86.8			
87 87.3 87.4 87.5 88.7 89.2			
University of Cincinnati College of Medicine	(1933)*	78.6	
78.7 78.8 79.4 79.7 79.7 79.9 80 80.1 80.7 80.8			
80.9 80.9 81 81 81.1 81.1 81.1 81.2 81.2 81.2			
81.3 81.4 81.4 81.6 81.7 81.8 82 82 82.1 82.1			
82.3 82.3 82.4 82.4 82.4 82.4 82.5 82.7 82.8 82.9			
83 83 83.2 83.4 83.5 83.6 83.6 83.6 83.8 83.9			
84.1 84.2 84.5 84.5 84.6 84.6 84.7 84.8 84.8 85			
85.2 86 86.3 86.6 87.4 87.1			

Western Reserve University School of Medicine (1932)	80 2
(1933) 75 4, 77 9, 79 4, 80 8, 80 5, 80 7, 80 9, 81 1, 81 2, 81 8, 82 2, 82 4, 82 5, 82 5, 82 6, 82 7, 82 8, 83 2, 83 2, 83 3, 83 3, 83 4, 83 4, 83 4, 83 7, 83 8, 83 9, 84 4, 84 1, 84 3, 84 3, 84 4, 84 4, 84 6, 84 7, 84 8, 84 9, 85 5, 85 3, 85 5, 85 6, 85 7, 85 7, 86 2, 86 2, 86 4, 86 6, 86 8, 86 8, 86 9, 87 1, 87 4, 87 6	
Hahnemann Medical College and Hosp of Philadelphia (1932)	82 2
Jefferson Medical College of Philadelphia (1931)	87 8
(1932) 84 8 (1933) 81 6 82 6	
University of Pennsylvania School of Medicine (1931)	80 3
Woman's Medical College of Pennsylvania (1932)	82 7
Marquette University School of Medicine (1933)	84
University of Toronto Faculty of Medicine (1930)	76
(1931) 77 2, (1932) 79 3	
McGill University Faculty of Medicine (1933)	77 7
Leopold-Franzens-Universität Medizinische Fakultät Austria (1932)	81 1
Regia Università di Palermo degli studi Facoltà di Medicina e Chirurgia (1924)	75
University of Edinburgh Faculty of Medicine (1931)	75 1
College	Year Grad Per Cent
Magyar Királyi Orvostudományi Egyetem Orvostudományi Hungary (1924) 64 9 (1926)†	68 8
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1925)	64 6
Universitatea Regele Ferdinand I din Cluj Facultatea de Medicină și Farmacie Rumania (1924)†	71 8

Forty-one physicians were licensed by reciprocity and one by endorsement, July 11. The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine (1931)	2		Colorado
George Washington University School of Medicine (1929)			Maryland
Emory University School of Medicine (1931)			Georgia
Rush Medical College (1931)			Illinois
Indiana University School of Medicine (1931)			Indiana
University of Kansas School of Medicine (1932)			Kansas
University of Louisville School of Medicine (1931)			Kentucky
Tulane University of Louisiana School of Medicine (1931)			Louisiana
Johns Hopkins University School of Medicine (1917)			New York
Harvard University Medical School (1929)			
University of Michigan Medical School (1931)			
St. Louis University School of Medicine (1932)	10		Missouri
Washington University School of Medicine (1931)			Missouri
University of Rochester School of Medicine (1931)			Virginia
Jefferson Medical College of Philadelphia (1922)			Virginia
Temple University School of Medicine (1921)			Pennsylvania
University of Pittsburgh School of Medicine (1931)			Pennsylvania
Vanderbilt University School of Medicine (1928)			Tennessee
Medical College of Virginia (1926)			Virginia
Medizinische Fakultät der Universität Wien (1901)†			Maryland
Magyar Királyi Ferencz József Orvostudományi Egyetem Hungary (1914)†			Indiana
College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Harvard University Medical School (1930)			N B M Ex

* These applicants have received an M.B. degree and will receive an M.D. degree on completion of internship.
† Verification of graduation in process.

Iowa September Examination

Mr H. W. Greff, director, Division of Examinations and Licenses, reports the written examination held by the Iowa State Board of Medical Examiners Sept. 12-14, 1933. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Nine candidates were examined, 8 of whom passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine (1933)*	89		
College of Medical Evangelists (1931)	89 1		
University of California Medical School (1921)	89 4		
Northwestern University Medical School (1933)	86		
University of Illinois College of Medicine (1933)†	88 1		
Harvard University Medical School (1928)	88 8		
University of Minnesota Medical School (1933)	87 3		
Regia Università di Firenze degli studi Facoltà di Medicina e Chirurgia (1925)	85 1		
College	Year Grad	Per Cent	
Lehigh Medical College, Iowa (1904)			87

* License withheld pending completion of internship.
† This applicant has completed his medical course and will receive his M.D. degree and Iowa license on completion of internship.

Arizona October Report

Dr. I. H. Patton, secretary, Arizona State Board of Medical Examiners, reports the written examination held October 3-4, 1933. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Sixty candidates were examined, 56 of whom passed

and two failed. Seven physicians were licensed by reciprocity and 3 by endorsement. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Rush Medical College		(1933)	78 1
University of Kansas School of Medicine		(1931)	81
St. Louis University School of Medicine		(1932)	75, 29 5
McGill University Faculty of Medicine		(1933)	76 7
College	FAILED	Year Grad	Per Cent
Osteopaths			69 8 71 1
College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Chicago College of Medicine and Surgery		(1915)	Illinois
University of Louisville Medical Department		(1910)	Kentucky
University of Michigan Medical School		(9-9)	Michigan
Washington University School of Medicine		(1920)	Missouri
John A. Creighton Medical College		(1919)	Kansas
Vanderbilt University School of Medicine		(1929)	Tennessee
Dalhousie University Faculty of Medicine		(1932)	Nova Scotia
College	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists		(1933)N B M Ex	
Akron Medical College		(1929)N B M Ex	
Medical College of Virginia		(1930)N B M Ex	

Book Notices

Infections of the Hand: A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. By Allen B. Kanavel, M.D., Sc.D., Professor of Surgery, Northwestern University Medical School, Chicago. Sixth edition. Cloth. Price \$6.15. 552 with 216 illustrations. Philadelphia: Lea & Febiger, 1933.

This book has established itself as a classic. It is the work of the best known authority on the subject and presents a complete study of the anatomy, pathology and treatment of infections of the hand. The author has added much new material and radically revised the old. The new material consists of investigations on special infections such as bites and injuries from the teeth, metacarpophalangeal infections, gangrenous infections, and injuries from indelible pencils and cattle hair. Chapters have been added on the function of the hand and the use of splints, and the prophylactic treatment of injuries. Practically every chapter has been brought down to date. In this edition the subject matter is presented with the discussion of the anatomy and the experimental investigation separated from the clinical study. Kanavel emphasizes the fact that lymphangitis and suppurative tenosynovitis are still too often unrecognized and improperly treated. In lymphangitis, hasty incision not infrequently leads to unnecessary loss of life. In suppurative tenosynovitis the pathologic condition is not recognized and failure to institute early treatment leads to prolonged illness and permanent disability. The chapter on the use of splints after infections of the hand is highly instructive. The chapter on function of the hand in relation to infections is itself worth the price of the book. The composition, including the printing and the paper is excellent. The illustrations, including line drawings, anatomic dissection, colored diagrams and reproductions of photographs, each and every one of which illustrates at least one point, are instructive. Many of the author's original hand drawings have been replaced by excellent sketches by Tom Jones, who has drawn several illustrations from the author's film on the diagnosis and treatment of infections of the hand. The book should be on the desk of every physician and surgeon. It is indispensable for traumatic surgeons.

Le métabolisme du lazote. Dépenses besoins couverture. Par Emile F. Terroine, professeur à l'Université de Strasbourg. Les problèmes biochimiques VIII. Boards. 128 pages. 12 francs. 1933. 21 illustrations. Paris: Les Éditions Universitaires de France, 1933.

This volume presents a detailed survey of the whole field of nitrogen metabolism by a competent authority. Through the excellence of his systematic arrangement the author has succeeded in presenting his subject in a complete and continuous manner without sacrificing the detailed consideration of the numerous constituent problems that together constitute the whole. The material is divided into short sections and paragraphs each with subheads that indicate its content of subject matter. The argument is amply illustrated by tabular data and experimental references to the international literature are made.

The book is primarily academic and not clinical in nature. However, the distinct separation of fact and theory, the extensive use of illustrative experimental data, and the systematic arrangement, which facilitates reference, should make it a valuable addition to the library of the well informed physician as well as to that of the biologist.

Housing and the Community—Home Repair and Remodeling. Reports of the Committees on Housing and the Community. Joseph H. Pratt, M.D., Chairman. Reconditioning, Remodeling, and Modernizing. Frederick M. Felker, Chairman. Edited by John M. Gries and James Ford. Publication No. 8 of the President's Conference on Home Building and Home Ownership. Cloth Price \$1.15. Pp. 291 with illustrations. Washington, D.C.: President's Conference on Home Building and Home Ownership.

This is a careful study of housing, home repair and remodeling with special reference to the relation of housing to health, delinquency, industrial efficiency, safety, citizenship, recreation and education. There is an extensive bibliography with many quotations and abstracts referring especially to housing and crime. The committee displays a praiseworthy caution in drawing conclusions as to the causative relationship between bad housing and bad health, delinquency, industrial inefficiency and crime. The book does point out that bad housing is almost universally related to other unfavorable environmental influences and that it is probably one factor in creating or at least favoring the increase in social maladjustment. It points out the importance of wise financing and planning of housing developments. The book is a storehouse of facts and the conclusions are in most instances sufficiently guarded to indicate that while a strong impression exists that bad housing is bad municipal economy, there is no statistical proof. Perhaps impressions are worth more than statistics in arriving at such a judgment. Particularly valuable is the appendix which contains a home inspection check list by means of which a building can be evaluated by the occupant or prospective purchaser as to its desirability for a home with respect to construction safety, health convenience, equipment, fire hazards and probable future value. This is a reference book which every health and social worker needs to read.

Verhandlungen der Deutschen Gesellschaft für Kreislaufforschung VI. Tagung gehalten zu Würzburg am 6 und 7 März 1933. Herausgegeben von Prof. Dr. Bruno Kisch. Paper. Price 1.50 marks. Pp. 276 with 132 illustrations. Dresden & Leipzig: Verlag von Theodor Steinkopff, 1933.

There are altogether twenty-eight papers in this volume of transactions. In addition there are numerous discussions some of which are evidently reported in full. The general subject of the meeting was the circulation and the nervous system. The leading paper ("referat") taking up particularly the anatomic and physiologic aspects was by H. E. Hering of Cologne. The leading paper dealing with the clinical features was by F. Kauffmann of Berlin. Among the papers were several dealing with the carotid sinus, a few with the electrocardiogram and with cardiac irregularities. Various phases of blood pressure were also discussed. The president of the society, Professor E. Magnus-Alesleben of Würzburg, delivered the opening address, which was largely historical. The volume is useful for reference and is of especial interest to one wishing to know the latest views of our German colleagues on a subject that the president said had been regarded by some as too difficult to be taken up, a fear, however, which he did not share.

The 1933 Year Book of Radiology. Diagnosis. Edited by Charles A. Waters, M.D., Associate in Roentgenology, Johns Hopkins University. Therapeutics. Edited by Ira I. Kaplan, B.Sc., M.D., Director, Division of Cancer, Department of Hospitals, City of New York. Cloth. Price \$7. Pp. 804 with 780 illustrations. Chicago: Year Book Publishers, Inc., 1933.

In this collective review of the year's progress in radiation diagnosis and therapy the authors have excelled their effort of last year to present a readable well arranged sufficiently illustrated summary of recent progress in their respective fields. It would seem to be an indispensable volume for every radiologist and it will be of assistance to every physician who desires to keep abreast of radiologic progress. The attention devoted to foreign literature is gratifyingly increased over the space given to foreign abstracts in the previous volume. Methods employed in radiation therapy are constantly being revised and irradiation is being called on increasingly for the treatment of an ever-growing number of complaints. The field of radiologic physiology, biology and physics still constitutes a challenge to research for the elucidation of many unknown factors. It is apparent

that biologic functions play a more important part than the mere physical variations in the rays produced by voltages of different amount, or by the gamma rays of radium. Additional experience tends to show that longer exposures, perhaps amounting in some selected cases to the whole-body irradiation method of Heublein, are preferable to the shorter more intense, more localized, treatments. It is hoped that the authors may receive sufficient encouragement in their work to insure the annual reappearance of this volume.

Diagnostik und Therapie der Lungen- und Kehlkopftuberkulose. Von Dr. H. Ulrich, Arztl. Direktor des Tuberkulosekrankenhauses der Stadt Berlin in Sommerfeld (Osthavelland). Second edition. Paper. Price 2.50 marks. Pp. 389 with 269 illustrations. Berlin: Julius Springer, 1933.

The subject of tuberculosis, like the politics of the day, is undergoing a rapid and striking change and the present edition is practically a new book. After thirty-five pages devoted to pathogenesis and pathology, similar space is allotted to childhood tuberculosis. Physical, radiologic and bacteriologic diagnosis is well discussed. The exudative and productive types of pulmonary tuberculosis as well as hematogenous tuberculosis are described. To treatment, 100 pages is assigned. Specific therapy, chemotherapy and complications have ample sections given them. Laryngeal tuberculosis is discussed satisfactorily in seventeen pages. The section on intestinal tuberculosis is not satisfactory. The psychology of the consumptive is fully discussed. The use of alcohol in treatment is mentioned, and one learns that the author does not advocate its use except for the usual extreme conditions. The Gerson-Sauerbruch-Hermannsdorfer diet is given, and some discussion of gold treatment, to which Ulrich is neutral or mildly opposed. It is interesting to note that he advocates roentgen treatment of forms of productive tuberculosis which are tending to induction. There is no mention of the use of *Bacillus Calmette-Guérin*. A good discussion of surgical measures occupies the last third of the book. It is to be noted that Ulrich does not favor phrenic exeresis but rather emphysema. There are new sections on oleothorax and on plombierung. The book is a good summary of modern German work on tuberculosis and is written in a clear style and well printed. The numerous illustrations are admirable, far better than those usually issued by American publishers. The bibliography is practically all German for only two references are given to foreign literature, one American, one French. In spite of this the author has not overlooked much and to all who read German the book is heartily recommended, for one is impressed by the scientific manner in which the author gives his own experience in sections where his is at variance with that of others.

Histopathology of the Peripheral and Central Nervous Systems. By George B. Hassin, M.D., Professor of Neurology, University of Illinois, College of Medicine. Cloth. Price \$6. Pp. 491 with 229 illustrations. Baltimore: William Wood & Company, 1933.

This textbook is by far the best that has appeared in the recent deluge of works on neuropathology. It is written by a man who has had great clinical experience and possesses an intimate first-hand knowledge of preparations of pathologic material and of the methods by which these preparations were obtained. Although written in a style that sometimes differs from the American idiom, the descriptions of the microscopic slides are so objective that one has the impression that the author wrote them directly from the slides. The illustrations, particularly the photomicrographs, are excellent, and the publishers have done a worth-while job in reproducing them—in fact, the illustrations are much better than one usually finds in a textbook for students. Hassin has several radical theories, for example that the choroid plexuses, instead of secreting cerebrospinal fluid, absorb it. Although he has paid too little attention to experimental evidence and lays too great stress on doubtful pathologic material in this book, he has refrained from emphasizing his radical point of view and on the whole his summaries of disease entities will be clearly understood by the student. The book has perhaps only one fault, which will probably always be found in a pathology written by a clinician: that not enough space is given to the fundamental disease processes and too much space is given to the diagnostic characteristics of all the different diseases. The first part deals with the diseases of the peripheral nerves, the second part with the diseases of the spinal cord, the third part with the diseases of

the brain, and the fourth part (a welcome addition) with the most useful staining methods that are applicable to nervous material obtainable in the routine pathologic laboratory Hassin's book deserves an enthusiastic reception

Die Epidemiologie des Typhus abdominalis unter besonderer Berücksichtigung des Bact typhi flavum Von Prof Dr med et phil E G Dresel Direktor des Hygiene Institutes Greifswald Heft 1 Mikrobiologie Immunbiologie und Grenzgebiete Wissenschaftliche Zeitschriften Paper Price 3.60 marks Pp 40 with 2 illustrations Leipzig Johann Ambrosius Barth 1933

German bacteriologists in and about Greifswald have been interested recently in a yellow variant of the typhoid bacillus ("Bacterium typhi flavum"), which they believe to be a more or less saprophytic form" capable of longer life outside the human body than the ordinary typhoid bacillus In Dresel's opinion the occurrence of this resistant type explains some allegedly obscure facts in the epidemiology of typhoid It may be questioned whether the sources of infection of typhoid are in reality as confusing as they are assumed to be in this pamphlet

Nervous Breakdown Its Cause and Cure By W Beran Wolfe M.D. Director the Community Church Mental Hygiene Clinic N Y Cloth Price \$2.50 Pp 240 New York Farrar & Rinehart Inc 1933

Psychiatrists seldom use the term "nervous breakdown" The public uses it constantly So Dr Wolfe has written a book on psychoneurotic reactions for the public in words it can understand He is a sympathetic follower of much of what Dr Alfred Adler has taught The author's explanation of the "nervous breakdown" as "a valuable unconscious offensive-defensive device designed to save face before personality disaster occurs" will not fit all cases but is accurate in enough instances to justify amply the text that follows The seven chapters are on causes, symptoms, cases and cures (three chapters), plain words to patients, and creative self realization The book is exceedingly well written contains a fund of excellent advice, is well balanced in its scientific outlook and is distinctly practical It shows ample evidence of orderly thinking and presents suggestions in a common sense and usable fashion It can be unreservedly recommended to the layman

Les arthrodèses dans la coxalgie Indications techniques résultats éloignés Par Paul Bufnoir Préface du Professeur Sorrel Paper Price 20 francs 1p 109 with 9 illustrations Paris Masson & Cie 1933

The author describes the indications contraindications general principles complications, technic and end results in cases of tuberculous hip disease treated by arthrodesis He reports twenty-nine old cases occurring in adults He describes eight old cases of arthrodesis for tuberculosis of the hip in the process of evolution in infants The illustrations are well reproduced

Bone Growth in Health and Disease The Biological Principles Underlying the Clinical Radiological and Histological Diagnosis of Perversions of Growth and Disease in the Skeleton By H A Harris D.Sc M.B. B.S. Professor of Clinical Anatomy University College and University College Hospital London Cloth Price \$10.00 1p 248 with 201 illustrations New York & London Oxford University Press 1933

This book is the outgrowth of articles published in such periodicals as the *British Journal of Radiology*, the *Journal of Anatomy* and the *Lancet* Those who have read the original articles will be glad to see them in book form The author who is an authority on the subject offers a wealth of material in presentable form The book is divided into three parts on lines of arrested growth in the long bones in childhood bone growth with special reference to deficiency diseases and significance of the fundamental processes of growth and repair in skeletal disease First are recorded clinical and experimental researches on the growth of bone In the first part the researches are based on a study of arrested growth in disease and in experimental animals The author indicates the application of the results of this study to the elucidation of certain clinical facts in diseases of children and animals and this forms the main portion of the second part with special reference to the correlation of roentgenographic appearance and histologic structure The third part contains recent investigations in which Harris demonstrates the distribution of mucopolysaccharides in cartilage The distribution of glycogen in relation to plasma plate and the reaction to primitive myophascic character that accompany the age changes in the skeleton are brought

index of the work to be pursued in the future The author states that the romance of bone growth is not yet exhausted The manifestation of disease in bone, the registration of lines of arrested growth in the long bones, the phenomenal response of certain deficiency diseases to vitamins, the age changes in bone, and the extent to which the child can grow out of disease conditions, still present fundamental problems in clinical research and biology The illustrations, including line drawings reproductions of photographs and roentgenograms, gross sections and microscopic sections are instructive and beautifully reproduced The author's experimental work is given and a good bibliography is appended This book should be of interest to every pediatrician and orthopedic surgeon

Medicolegal

Malpractice Abandonment of Patient After Operation—The plaintiff sued the defendant-osteopaths for malpractice He charged (1) that they had erroneously diagnosed his condition as appendicitis and had performed a useless operation, (2) that they so carelessly and negligently performed the appendectomy as to cause a stoppage or obstruction in his bowels, and (3) that they failed to render him the proper post-operative care At the close of the plaintiff's evidence the trial court ruled that the evidence was insufficient to justify the submission of the case to the jury Subsequently on appropriate motion by the plaintiff, the trial court revised its ruling and ordered the defendants to stand trial on the charge of negligent postoperative care From this revised ruling the defendant Laughlin appealed to the Supreme Court of Missouri, division 1 The evidence, said the Supreme Court, must be viewed in the light most favorable to the plaintiff Briefly, the plaintiff, Aug 28 1928 consulted Sites an osteopath, for relief from a severe pain in his abdomen Sites diagnosed the ailment as appendicitis and advised an immediate operation which was performed by Laughlin, another osteopath After the operation the plaintiff began vomiting and continuously suffered intense pain in his abdomen, which was "swollen as tight as a drum" He remained in the hospital thirteen days, during which time he had no bowel movement and vomited fecal matter "every day or so" He complained to interns and nurses and asked that Laughlin be called but the latter did not appear Apparently nothing was done during his stay in the hospital to relieve the plaintiff's condition On September 10 he was discharged from the hospital and returned to his home, where Sites continued to treat him Five days later his condition becoming worse, a nonsectarian practitioner was summoned and a diagnosis of intestinal obstruction was made Finally a passage of the bowels was induced, September 29 the thirty-first day after the operation

In the absence of an agreement, understanding or notice to the contrary said the Supreme Court, when a physician is employed to perform an operation the relation of physician and patient continues until ended by the mutual consent of the parties or by the physician's withdrawal after reasonable notice, or by the dismissal of the physician by the patient or by the cessation of the necessity that gave rise to the relation The physician must not only use reasonable and ordinary care and skill in performing the operation but during the continuance of the relation of physician and patient he must exercise ordinary diligence in the subsequent treatment He must give or see that the patient is given such attention as the necessity of the case demands Laughlin continued the Supreme Court was in charge of the case from the time the plaintiff entered the hospital and during the time he remained there There was no agreement limiting his service to the mere performance of an operation or any agreement understanding or notice to the plaintiff that Laughlin would not thereafter either attend and treat the plaintiff or see that such proper care and treatment as the case might require were received The plaintiff placed his faith in Laughlin's hand submitting to and relying on his knowledge skill and judgment After the operation the plaintiff remained under Laughlin's care relying on his judgment, and the relation of physician and patient continued

Laughlin contended that the question whether or not requisite degree of care and skill were exercised in treating the plaintiff is to be tested by the general rules and principles of osteopathy, not by the principles of nonsectarian medicine. This argument, said the Supreme Court, has no application to the facts presented here, for the plaintiff's action does not proceed on the theory that some improper method, system or course of treatment was used, but that after the operation Laughlin negligently failed to discover and observe the plaintiff's condition and symptoms and negligently failed to give, or cause to be given, the attention and care which such condition demanded. The intestinal obstruction that developed immediately after the appendectomy continued to grow worse. The distended abdomen, the intense suffering, the absence of any bowel movement, and the vomiting of fecal matter should have indicated a serious intestinal obstruction. It is apparent that this condition was such as to have been readily discoverable by the exercise of that reasonable degree of care, examination and attention which it was incumbent on Laughlin as the physician in charge of the case, to exercise. The plaintiff's evidence concluded the court, was sufficient to justify submission of the case to the jury to determine whether or not Laughlin negligently failed to exercise reasonable care toward the plaintiff after the operation and whether the alleged nonattention and failure to observe and discover his condition and administer or give treatment calculated to correct or relieve such condition proximately contributed to aggravate intensify and prolong the plaintiff's ailment. The action of the trial court in awarding a new trial to the plaintiff was accordingly affirmed.—*Reed v Laughlin* (Mo.) 58 S. W. 2d 440

Malpractice Gangrene Following Treatment of Fracture—The plaintiff, a girl 12 years old, fell from a swing and broke both bones of her left arm, just above the wrist. The ends of the bones extended through the skin and became covered with dirt. She was taken to a hospital and there placed under the care of the defendant-physician. Two days thereafter gangrene set in and on August 16 it became necessary to remove the arm at the shoulder. An uneventful recovery followed. In this suit against the defendant for malpractice, the plaintiff claimed that the defendant was negligent in rendering treatment in the first instance in that he used dry dressings when he should have used wet and that, while he dressed the arm on the morning of August 15, he did not again see the patient until he was called by the supervisor of nurses at the hospital about 6 a. m., August 16, and that no other competent persons examined the patient in the meantime. The trial court gave judgment for the plaintiff and the defendant appealed to the Supreme Court of Alabama.

It was claimed that on the afternoon of August 15 manifest signs of the infection were in evidence which would have been discovered by the defendant had he examined her that afternoon or night. The defendant contended that he did examine the patient several times, and the hospital chart showed that he made an examination on the afternoon of August 15. There was, however, substantial evidence to the contrary. The expert witnesses were in accord, said the Supreme Court of Alabama, that the circumstances of the accident known to the defendant suggested the probabilities of gangrene, known to be very dangerous. Such knowledge, all admitted by the defendant, demanded frequent examination and radical treatment. There was substantial evidence that on the afternoon of August 15 the wound emitted a strong and offensive odor and that the patient had fever and was restless. Early the following morning the infection had extended past the elbow. That circumstance and the evidence of the symptoms on the preceding afternoon and night justify an inference that the infection on that afternoon could and would have been detected by a competent person, said the court and prompt and efficient treatment would have probably stopped its progress and prevented the necessity of amputation. When a physician undertakes to treat a patient whose condition, known to the physician, is such that without continuous or frequent expert attention injurious consequences may result, he must either render such attention himself or see that some other competent person does so. The question of the defendant's negligence was a fair issue for the jury. The trial court, however, refused to charge the jury that if

they believed the evidence they could not find for the plaintiff because the defendant used dry bandage in dressing the plaintiff's injury. This was error, said the Supreme Court. The gravamen of the complaint is negligence, not want of skill. Where there are various recognized methods of treatment, the physician is at liberty to follow the one he thinks best and is not liable for malpractice because expert witnesses give their opinion that some other method would have been preferable. The experts in this case all agreed that wet and dry dressings in such cases are both used by skillful physicians and that standard authorities approve them both. It is largely in the sound discretion of the surgeon in charge of the case. The defendant was shown to have been a competent surgeon and used the method adopted by him with care and skill, and the wound continued to drain to the last and did not seal up. This is the result the best process was expected to secure. For using dry bandage the defendant is not chargeable with want of due care or negligence, and the refusal of the trial court to charge the jury as requested constituted a prejudicial error to the defendant. The judgment of the trial court, therefore, was reversed and the case remanded.—*Jackson v Burton* (Ala.) 147 So. 414

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Chicago, Jan. 8-10. Dr. Philip Lewin, 104 South Michigan Blvd., Chicago, Secretary.
Annual Congress on Medical Education and Licensure, Chicago, February 12-13. Dr. W. D. Cutter, 535 North Dearborn Street, Chicago, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Sixth Annual Meeting held in Chicago, Oct. 27 and 28, 1933

(Concluded from page 2078)

Studies on Surgery of the Inferior Vena Cava

DRS. WALTMAN, WALTERS and JAMES T. PRIESTLEY, Rochester, Minn. Experimental and clinical studies were made following incision and suture of the inferior vena cava. In the experimental studies on dogs, a portion of the vena cava was removed and the vessel repaired with specially prepared silk sutures. Subsequently, at varying intervals, necropsy was performed on the dogs to ascertain the status of the healing processes in the vena cava and to discover any possible evidence of thrombosis or embolism. Serial microscopic preparations made from the vena cava at the operative site evidenced the reparative reaction in the wall of the vein, starting with early fibroblastic proliferation in the adventitia and ending with complete endothelialization of the intimal layer. In four clinical cases the inferior vena cava was opened for the removal of papillary projections of a right renal neoplasm, or during mobilization of a densely adherent kidney. In each case hemostasis was satisfactorily obtained by suture in some cases and by the application of hemostats in others, without the necessity of ligating the vena cava.

DISCUSSION

DR. MORRIS H. NATHANSON, Minneapolis. I should like to ask concerning the possibility of operating on the inferior vena cava within the pericardium. Several years ago I reported some cases of therapeutic pneumopericardium before this society. In one case the air did not appear on the right side of the heart which indicated that there were some adhesions in this region. The patient later developed a cardiac decompensation with only slight dyspnea but marked liver enlargement and ascites. I considered that this might be due to adhesions about the inferior vena cava and this was found at autopsy. Were the possibilities good for surgical intervention in this case?

DR. ARGO J. BEEM, Cleveland. I should like to ask the authors whether they have had evidence of thrombosis.

DR. J. T. PRIESTLEY, Rochester, Minn. I have had no experience with clinical surgery of the vena cava for adhesions.

about the pericardium. In animals the vessel can be approached quite satisfactorily and can be manipulated with a certain amount of success and satisfaction, in this region. Very few satisfactory results following pulmonary embolectomy have been reported. If conditions are favorable, the vena cava might possibly be operated on at that point. I endeavored to discuss the evidence of healing in the vena cava and to discover any possible evidence of thrombosis or embolism. No pulmonary emboli were discovered in any animal, however, in several instances there was a small adherent thrombus at the operative site.

Focal Infection and Erythema Nodosum

DR. ISADORE PILOT, Chicago. Erythema nodosum was observed as a sequela of streptococcal sore throat in which filtrates of the hemolytic streptococci produced typical nodules on intradermal injection. Tuberculin tests in two patients gave no reaction. In another rare type of case, erythema nodosum complicated lymphogranuloma inguinale. The Frei test was positive, and the lesion from the intradermal test was markedly nodular. A third common type gave a nodular reaction to tuberculin. In the two latter instances, streptococcal filtrate caused no reaction. It would appear that erythema nodosum is not a clinical entity but a peculiar hypersensitive response of the skin to toxic products from foci of infection due to streptococci, tubercle bacilli, the virus of lymphogranuloma inguinale and perhaps other agents.

DISCUSSION

DR. H. M. CONNER, Rochester, Minn. I should like to ask Dr. Pilot whether he considers these reactions sufficiently definite, so that, given a case of erythema nodosum, one could, by use of a series of antigens, decide on the etiologic agent.

DR. ISADORE PILOT, Chicago. These reactions were not of the immediate allergic type that one sees with proteins. They come on in twenty-four hours and instead of fading, as in connection with the tuberculin test, they go through an involution as an erythema nodosum nodule and persist up to ten days. I have tried other streptococcus antigens, for instance the scarlet fever streptococcus. This will give an inflammatory reaction but the nodule is not as violent or as marked in its extent as the nodule from the autogenous strain. As far as treatment is concerned there is nothing to do in these cases. When the streptococci disappear from the throat, the focus apparently is of only transitory nature and the erythema nodosum disappears. In one instance although the erythema nodosum cleared up the arthritic pains persisted. About four months later the tonsils were removed and the same streptococci isolated. The arthritic pain that had been present disappeared, so the tonsils could be considered the focus. In using tuberculin, one should employ 1:10,000 instead of 1:1,000. With reference to streptococcus antigens, one can obtain some definite reaction with stock antigens of hemolytic or even non-hemolytic type but it is preferable to make the antigen from the patient's own throat if there is a definite history of definite evidence of a focus.

Measurements of Muscular Work in Occlusive Arterial Disease of the Lower Extremities

DRS. DWIGHT L. WILBUR and GEORGE E. BROWN, Rochester, Minn. An attempt has been made to develop an apparatus with which the movement of walking is simulated in order that measurements of muscular work may be made on the basis of horse power units. In this way the extent of incapacity of patients with occlusive arterial disease and intermittent claudication and the effects of therapy on them can be determined. The apparatus consists of a sewing machine modified so that the patient's leg must push against a weight which may be adjusted by noting the duration of the experiment, the horse power that is developed can be measured. By this method the muscular capacity of the leg of twenty-nine normal persons who served as controls and those of thirty patients with various types of peripheral arterial disease has been measured. The method is of value and with modification which come with experience should be an adjunct in the study and treatment of patients with localized forms of arterial disease. Error inherent in this type of test are the effect of

personal threshold of pain and fatigue, the factor of muscle conditioning, and unknown influences of the general state of the patient. Fairly close approximations of the amounts of muscular work can be obtained on repeated tests under variable conditions in normal and diseased subjects. The following results have been obtained: 1. As a group, those with occlusive arterial disease (thromboangitis and arteriosclerosis obliterans) of the lower extremities are unable to perform as much work with their legs as do normal persons and the degree of disability is quite similar in the two types of arterial disease. It follows, therefore, that the disability is dependent on occlusion rather than on the type of disease underlying the occlusive process. 2. In the normal and diseased subjects as groups the time of onset of the sensation of fatigue in the calf muscles was very much the same, but the duration of the exercise was sharply different. 3. No correlation could be established between the amount of muscular work performed and the severity of arterial occlusion of an extremity as demonstrated by the presence of pulsations of the arteries of the extremity and the grade of vasospasm as measured by dilatation with fever. 4. In those cases in which intermittent claudication was reproduced, the duration of the exercise, the total amount of work performed, the time of onset of fatigue, and the pulsation of the arteries were significantly less when compared with the group in which occlusive arterial disease was present but in which intermittent claudication was not a distinct symptom.

DISCUSSION

DR. L. N. KATZ, Chicago. In a series of studies carried out in the laboratory, my associates and I have been able to show that there are a number of factors contributing to the production of pain in intermittent claudication, the most important factors being the amount of muscular work, circulatory stasis, and the available oxygen to the tissues. I should like to ask the authors whether the patients had a preliminary period of rest before performing the exercise. We have found quite consistently, and contrary to the previous observations of Lewis, that a period of ischemia preceding the exercise will materially shorten the amount of exercise necessary to produce pain. I should also like to ask whether an attempt was made to evaluate the role of circulatory disturbances in venous flow, particularly those due to varicosities. We have found that venous stasis alone, without arterial occlusion, may lead to the development of pain on exercising the limb. Finally, I should like to ask whether an attempt was made to check the rate at which the exercise was performed by the patients. It has been clearly established that a given quantity of work may require a different amount of muscular effort, depending on the rate at which the movements are performed.

DR. DWIGHT L. WILBUR, Rochester, Minn. Most of our patients were rested for a period of from ten to fifteen minutes preceding the test. It did not seem probable that moderate exercise just preceding the test had any great influence on the results of the exercise. Venous stasis was not present to a recognizable degree in the majority of our patients. Varicosities were uncommon. We considered the rate at which the machine was run and found it to be significant in regard to the horsepower developed but not as regards the total amount of work done. As a group, the arteriosclerotic individuals ran the machine considerably faster than did normal individuals and patients with thromboangitis obliterans.

Relationship Between Acid-Base Equilibrium and Bacterial Flora of the Stomach

LLOYD ARNOLD and MARION HOOD, Chicago. There are certain differences between the behavior of bacteria in contact with living cells and their behavior in test tube. A study of *in vivo* bacteriology has opened up new fields. Several body surfaces have been studied, such as the skin, the oral and nasal cavities, the conjunctiva, the stomach, the small intestine, and the vagina. Some observations dealing with the stomach are to be reported here. Arnold and Johnson found that the free acid gastric contents of dogs did not kill bacteria but exercised only a bacteriostatic influence on the flora. Continuous observation showed bacteria to be nonviable in the gastric lumen in the presence of free acid but a heavy viable flora appeared at the time the free acid disappeared or was neutralized.

Arnold recorded certain bactericidal or self-disinfecting powers of the small intestine. There is a correlation between the bacterial flora of the stomach and the small intestine. Gastric studies were extended to human subjects. Cultures of fractional aspirations of fasting gastric contents were taken on plain agar plates and the hydrogen ion concentration was determined colorimetrically. The acid-base equilibrium was adjusted toward the acid as well as the alkaline ranges and the changes in endogenous bacterial flora were determined by agar cultures as well as direct smears. Hydrochloric, acetic and lactic acid solutions and lemon and orange juice were used as acidifying agents. There are definite correlations between the acid-base balance and viable bacteria in the gastric lumen. The experimental work reported on laboratory animals has been substantiated. Dr. Gulbrandsen from this laboratory has found a correlation between the acid-base balance of the duodenum and the bacterial flora of this region. Acid-reacting duodenal contents are usually sterile on culture, alkaline-reacting duodenal contents give heavy growths of bacteria by cultural methods. The development of knowledge of the bacterial flora residing within the lumen of the stomach and upper levels of the small intestine may indicate a new approach to certain metabolic disturbances associated with decreased gastric acid secretions. The possible influences of this intragastric bacteriostatic mechanism on the degenerative diseases of the older age groups has been outlined by Arnold.

Effect of Splanchnic Nerve Section on Carbohydrate Metabolism

DRS G. K. FENN and GEZA DE TAKATS, Chicago. An attempt has been made to stabilize the carbohydrate tolerance and to reduce materially the insulin requirement in the juvenile diabetic patient. This end has been sought by means of section of the splanchnic nerves. One case (already reported) in which a rather striking result was achieved was in contrast to a second case, in which the result was much less striking. A method of case selection has been devised which may result in the separation of diabetic patients into different groups. The use of insulin sensitivity curves in normal persons and diabetic patients and the blood sugar responses to the ingestion of galactose before and after the administration of ergotamine constitutes a method of case separation that appears to be of value in the selection of cases for this type of treatment.

DISCUSSION

DR RUSSELL M. WILDER, Rochester, Minn. I regard these studies as of great importance. They bear on the heretofore ambiguous subject of sensitivity to insulin. But I am inclined to dispute the conclusion that different varieties of diabetes are indicated by these different reactivities to injections of insulin. I suspect rather that the test is a test of different kinds of people with the same disease and that the response obtained depends on the irritability of the nervous system.

DR R. W. SCOTT, Cleveland. I should like to ask whether the authors made any observation on how these individuals tolerate the effect of gravity on the circulation.

DR M. H. NATHANSON, Minneapolis. I am interested in the result obtained with ergotamine. The specific action of ergotamine is paralysis of the sympathetic nerve endings. In some studies which I am carrying out I attempted to modify the effect of epinephrine on the cardiac mechanism with ergotamine. I found, however, that I could not give doses sufficiently large in human beings to paralyze the effect of epinephrine on the heart. When one inspects the pharmacologic literature one finds that the doses of ergotamine used to antagonize the pressor effect of epinephrine in the experimental animal are much larger than those which are used in man. It is interesting, therefore, to see that there is some modification of sensitivity to insulin in man with moderate doses of ergotamine.

DR E. L. SEVRINGHAUS, Madison, Wis. It is rather noticeable that among juvenile diabetic patients there are occasionally young men and young women that are difficult to manage over a long period because of sudden shifts in glycemia. Erratic hyperglycemia properly leads these patients to

increased doses of insulin. Hypoglycemic reactions of severe types frequently follow. These patients seem to be emotionally unstable also. I wonder whether the authors have any data as to whether these patients that are more easily stabilized after splanchnic section are among those who are emotionally unstable, also whether they have any observations on change in the sympathetic mechanism after splanchnic section and whether it has any effect other than on the carbohydrate metabolism such as on the responses to emotional stimuli.

DR GEZA DE TAKATS, Chicago. It is obviously more difficult to suppress the pressor effect of epinephrine with ergot than the hyperglycemic effect. It is also true, of course, that much smaller quantities of epinephrine are necessary to produce hyperglycemia than to produce the rise in the blood pressure. The flattening of the hyperglycemia curve after the administration of ergotamine may be an inhibition of the sympathico-suprarenal mechanism, but it also may be due to an increased utilization of sugar in the periphery. Our present data do not supply any information on this question. In reply to Dr Sevringhaus I may state that the splanchnic section did stabilize tolerance in the first case, in which two respiratory infections were not followed by decrease in tolerance. In the second case we had no such experience. In regard to Dr Scott's question, the effect of gravity on blood pressure following splanchnic section was quite marked for about four weeks after both operations. The systolic pressure dropped from 100 to 85 and as low as 75 mm of mercury after three or four minutes of erect posture. However, after from four to six weeks neither of the two patients showed this postural hypotonia. Regarding Dr Wilder's question, it may be noted that the types of diabetes are different but that the same type showed different manifestations in different types of constitutions. Nevertheless, an increased sympathetic irritability of the glycoscretory mechanism may be beneficially affected by the suppression of such nervous impulses. The operation as we see it now, seems worthy of trial in juvenile diabetic patients who are insulin resistant and respond well to ergot.

Special Features of the Epidemic of Encephalitis in the St. Louis Area

DRS G. O. BROWN, R. O. MUEHLER, MAURICE W. SBER-TOLI and A. F. DEL VALLE, St. Louis. The average case was characterized by sudden onset with headache, muscular aches and sometimes chills, and by high irregular fever usually of seven to fourteen days' duration terminating by lysis. Meningeal symptoms such as headache, drowsiness, stupor, mental confusion and delirium predominated. Cranial nerve palsies were relatively rare. Neck rigidity, muscular tremors and spasticity, positive toe signs, absent or unequal tendon, abdominal and cremasteric reflexes were the most common physical observations. Some evidences of myocardial weakness were often noted in severe cases. Respiratory symptoms other than terminal pneumonia rarely occurred. Nausea and vomiting were frequent. The urine occasionally contained albumin, pus, erythrocytes and casts. Some elevation of blood nonprotein nitrogen was not infrequent. Blood sugar tended to be slightly increased, but glycosuria was very rare. Moderate polymorphonuclear leukocytosis was present in the majority of cases. The spinal fluid was clear, with usually some increase in pressure, a positive globulin, a normal sugar content, and an increased count of lymphocytic cells. The colloidal gold showed a tabetic curve. Convalescence was usually rapid, with few immediate serious nervous sequelae. The mortality was low in patients under 40 years of age. It was especially high in cases showing preexisting morbid conditions particularly hypertensive vascular disease.

Pathologic Changes in Patients Dying of Encephalitis

DRS R. S. MUCKENFUSS and H. A. MCCORDOCK, St. Louis. The most interesting pathologic lesions characteristic of the various types of encephalitis and the lesions found post mortem in patients dying in the present epidemic were found in the kidneys which were swollen and intensely congested, the pelvis being studded with small hemorrhages. Intramuscular inclusion bodies were found in the cells of the tubules by Dr Margaret Smith in about 50 per cent of the cases so far studied.

DISCUSSION ON ENCEPHALITIS

DR M A BLANKENHORN, Cleveland I should like to ask whether the pulmonary changes and kidney lesions can be considered in any way complications or are they secondary infections?

DR H M CONNER, Rochester, Minn Has there been any attempt at the production of the disease in animals and if so, with what success? Also, I should like to ask whether or not the inclusion bodies in the kidneys have any significance

DR C F KEMPF, Indianapolis I had an opportunity of seeing cases in Indianapolis during the epidemic of encephalitis that appeared in 1929, 1930 and 1931. Clinically this group of cases, of which there were something like 260, is very similar to the clinical picture described by Dr Broun and his associates. I doubt whether from the clinical observations one could tell the difference. There were a few mild cases, but the greater proportion terminated fatally in a very short time. There were more signs of meningeal irritation, and a greater number of these cases showed delirium. In the spinal fluid more cases presented a low cell count than an increased count. The colloidal gold changes were rather similar. However intraspinal drainage was continued in many of these cases for several weeks. The greatest difference in the two epidemics was in the pathology. The cases seen in Indianapolis either showed nothing more than a dilatation of the blood vessels, with some damage to the cortical cells, or some very definite meningeal changes without any perivascular areas or very few areas of focal necrosis. The virus was not demonstrated. Certainly the conditions clinically are very similar.

DR G O BROUN, St Louis The clinical picture presented was not sufficiently specific in itself to permit of absolute diagnosis. In the group that we studied there were a number of cases originally diagnosed as encephalitis that did not show it. I will mention one case specifically. The history and physical observations, if compared with those in many cases of encephalitis, were practically identical. There were headache, fever, nausea, vomiting, somnolence, slight rigidity of the neck, inequity of the reflexes, and one or two positive toe signs. The spinal fluid was clear, with a cell count of 52, and normal spinal fluid sugar. It proved to be a case of typhoid. Another patient came in with headache, neck rigidity and a spinal fluid cell count of 30. Very quickly after admission the patient was found to be suffering from malaria and on the administration of quinine the symptoms cleared up. I think it must be remembered that there is probably some increase in the spinal fluid cell count in many acute febrile diseases as well as in encephalitis. This means that every case must have a bacteriologic study before the diagnosis can be established with certainty. Regarding the colloidal gold curve, we usually made two spinal fluid examinations, one at the time of admission and one at the time of discharge. Ninety per cent of the colloidal gold tests showed a tabetic curve on admission and most of them showed the same on discharge. If there is any change it usually is a flattening out of the curve. We had one or two with a parietic curve and a few more with a normal curve. The cell count was still somewhat high in convalescents, many cases showing counts of from 10 to 30.

DR R S MCKENFLES, St Louis I am not able to say definitely whether the changes in the lungs and in the kidneys were actually part of the disease picture or were complications. They undoubtedly occurred in quite a high percentage of the cases. It is probable that they were in some way associated with the disease but we have no direct proof of this. As to the inoculation of animals numerous attempts were made from the onset of the epidemic to determine the etiologic agent. Routine blood cultures and spinal fluid cultures were made. Because of the difficulty in some cases in distinguishing it clinically from typhoid many stool cultures were made. With a few exceptions these were negative. When positive cultures were obtained the variety and purity of organisms were such that we felt that we were dealing with contaminant. Of the animals inoculated manifestations similar to disease seen in man were observed in our laboratory in monkeys. The monkeys showed an elevation of temperature associated with some incoordination and tremors. The disease was passed from monkey to monkey with some difficulty. During this time we

were sending autopsy material to a number of different laboratories. The material sent to Dr Webster at the Rockefeller Institute was used in a strain of mice highly susceptible to neurotropic viruses. He was able to produce a disease that could be maintained in these animals. Accordingly, mice were inoculated from second passage monkeys and a disease similar to that seen by Dr Webster was established in stock mice. The identity of this virus has not been settled but studies are in progress. We are exchanging strains of virus with Dr Webster and these will be compared in both laboratories.

The Electrocardiogram in Myocardial Infarctions A Review of 107 Clinical Cases and 108 Cases Proved at Necropsy

DR A R BARNES, Rochester, Minn This study had three primary objects in view. 1 To furnish an answer to the question of whether or not other cardiac lesions produce electrocardiographic changes which duplicate the characteristic electrocardiographic picture of acute coronary occlusion. 2 To reexamine the value of the RS-T changes in the electrocardiogram following acute myocardial infarction as a means of predicting the situation of infarction before death. 3 To determine, in those cases in which electrocardiographic evidence of acute myocardial infarction is lacking, the reasons for this failure. Study of cases encountered at the Mayo Clinic leads to the following conclusions. 1 No other cardiac lesion reproduces in its entirety the typical RS-T modifications of the electrocardiogram described as characteristic of acute myocardial infarction. 2 In no instance in which a typical T_1 or T_2 type of electrocardiographic change has developed have we failed to find myocardial infarction in the region anticipated. Failure to do so has meant either that the tracing was not typical or that sufficient study of the pathologic change in the predicted region of infarction has not been carried out. 3 A considerable number of infarctions are not signalized by the development of typical changes in the RS-T segment of the electrocardiogram. In our cases this failure was accounted for by one of the following causes: (a) Electrocardiograms were not obtained in sufficient number or in proper time relation to acute myocardial infarction. (b) There were multiple areas of acute myocardial infarction. (c) The presence of bundle-branch block obscured the electrocardiographic pattern of infarction. (d) Pericarditis or pericardial effusion modified the electrocardiographic changes. (e) The amplitude of the deflections in lead I or lead II was so small that the RS-T changes characteristic of infarction could not be recognized. (f) The tracing was obtained when a patient was dying.

The combined consideration of the RS-T and Q patterns yield more information regarding the presence of myocardial infarction than does the consideration of either pattern alone. Frequently the two patterns are equally indicative of infarction. Fairly commonly the RS-T segment changes are more typical of myocardial infarction than are the Q patterns. In a smaller number of patients the Q patterns are more typical of infarction than are the RS-T changes. There is a considerable group of patients in whom the RS-T changes indicate myocardial infarction when the Q patterns are entirely lacking. There is an occasional case in which the Q pattern is indicative of infarction when RS-T changes are absent.

In our cases the Q_1 type of electrocardiogram is found in association with infarction involving the apex and anterior portion of the left ventricle. The Q_2 type of electrocardiographic change is associated with infarction of the basal portion of the left ventricle.

The development of a highly characteristic T_1 or T_2 type of electrocardiographic change following acute coronary occlusion seems to indicate a better prognosis than does an atypical tracing. Typical T_1 or T_2 electrocardiograms were encountered six times as commonly as atypical electrocardiograms in the patients who recovered. In patients who died atypical tracings predominated over typical tracings in a ratio of four to three. The atypical tracings usually were found to be associated with multiple infarctions, extensive single infarctions, or complicating pericarditis, any one of which obviously increases the gravity of the outlook.

In case the reports of which have been published as well as in our cases T_1 and T_2 types occur with about equal frequency.

This means that the posterior basal portion of the left ventricle is infarcted approximately as often as the anterior apical portion.

Effect of Theophylline Ethylenediamine on Cardiac Infarction Produced by Ligation of the Coronary Arteries in the Dog

DRS W. M. FOWLER, H. M. HUERVITZ and FRED M. SMITH, Iowa City. In perfusion experiments on the isolated rabbit heart, theophylline ethylenediamine produced a far greater and more consistent increase in the rate of coronary flow than any other of the drugs that were studied. The action of theophylline ethylenediamine on the coronary circulation was further investigated through its effect on the size of the infarct produced by the ligation of a coronary artery in the dog. In the dogs receiving theophylline ethylenediamine there was a decided reduction in the size of the infarct as compared to that of the control series. Moreover the infarct was more sharply demarcated and did not present the usual frayed out appearance encountered in the untreated animals. These results indicate that this drug promotes the development of collateral circulation and thereby reduces the extent of the myocardial damage resulting from the ligation of a coronary vessel.

Cardiac Infarction Its Subjective Symptoms in Relation to Its Pathologic Anatomy

DR NATHAN S. DAVIS III, Chicago. There have been suggestions that the presence or absence of pain in cardiac infarction is related to the underlying pathologic anatomy. In an attempt to confirm or refute this theory some seventy-five records from the Department of Pathology of Northwestern University Medical School have been studied. It appears that the pain of cardiac infarction like that of angina of effort is due to relative ischemia of the myocardium more than to anything else, that complete ischemia of a limited area of the myocardium does not cause pain.

DISCUSSION ON HEART DISEASE

DR L. N. KATZ, Chicago. In regard to Dr. Barnes's paper a careful survey of the reported autopsy cases by Gilchrist and Ritchie failed to show any clear-cut correlation between the configuration of the electrocardiogram and the location of the infarct. This conclusion Wilson and his co-workers also arrived at from a survey of their autopsy cases. At Michael Reese Hospital, Drs. Hamburger, Priest, Saphir and I have examined thirty-four consecutive autopsy cases in twenty-one of which electrocardiographic records were taken. We could not consistently locate the position of the infarcts in this series from the appearance of the electrocardiograms. Korey and I have recently injected alcohol into various regions of the dog's heart and found that the electrocardiographic changes produced are not related to the location of the injured area. Furthermore, it must be borne in mind that as Dr. Bohning and I have recently shown, it is not always easy to fit the electrocardiogram into the T_1 or T_2 types. In regard to Dr. Davis's paper, in the study mentioned we could not correlate between angina pectoris and the nature of the infarct.

DR WARREN B. COOKSEY, Detroit. For several years I have been interested in a group of cases in which small infarcts were suspected but in which the infarcts could not be proved clinically. During a study of serial electrocardiograms following coronary thrombosis I was impressed by the occasional striking changes that occurred in both T_1 and T_2 . In certain cases the T_1 became very sharp of greater than normal amplitude and positively directed whereas T_2 became deeply concave negative. Because of the striking character of these changes, I have been interested in the frequency with which they also occur in patients of coronary sclerotic age with suggestive symptoms but who have never had a gross infarction. I have followed sixty cases with but one autopsy to date. This patient was being operated on under gas when, because of deep cyanosis he developed ventricular fibrillation and died. He had numerous small healed infarcts along the course of the left descending coronary. I should like very much to hear whether Dr. Barnes or Dr. Scott or Dr. Katz has encountered these changes.

DR ROY W. SCOTT, Cleveland. These three papers present many aspects for discussion to those interested in heart disease.

The paper of Dr. Fowler and his associates on the effect of theophylline ethylenediamine on the dog's coronary arteries raises the question as to how closely these results apply to man. It has been known for a long time that caffeine and its derivatives increase the coronary flow in the animal heart, but few carefully controlled observations have been made on man. The best of these, so far as I know, are the studies recently reported by Wayne and Laplace, who found that theophylline ethylenediamine, either by mouth or intravenously, increases the amount of exercise tolerated by patients with angina of effort. The clinical reputation of theophylline ethylenediamine as a coronary dilator is based largely on statements that its use over long periods diminishes the frequency and severity of the attacks. Such evidence is admittedly difficult to evaluate. Dr. Fowler and his associates mentioned that their animals receiving theophylline ethylenediamine for twenty-one days following coronary ligation showed smaller areas of infarction than did animals that did not receive the drug, and they ascribe their results solely to the effects of the drug. This conclusion would seem warranted were there not a considerable variation in the coronary circuit in normal dogs. Dr. Davis's paper illustrates the difficulties in correlating a clinical syndrome with anatomic observations. Proved cases of acute coronary thrombosis occur without pain. Recently I saw a patient with excruciating pain in the left elbow but not in the chest. One is reminded of a small group of individuals dying of myocardial insufficiency from coronary disease in whom chest pain may never be a conspicuous feature. I refer to those cases in which the coronary arteries appear to be slowly occluded, resulting in an extensive fibrosis of the ventricles.

DR M. H. NATHANSON, Minneapolis. I have had an opportunity to observe under somewhat controlled conditions the possible effects of theobromine and theophylline compounds in clinical cases. These compounds are expensive and at our hospital it was found that the cost approximated \$400 a month, owing to the freedom with which the interns and residents prescribed these substances. Several months ago it was decided that these compounds could be prescribed by only two members of the staff. In the outpatient department it was found that while many patients did as well when sodium nitrite was substituted, certain other patients returned and stated that there was a definite increase in the frequency of their anginal attacks when the theobromine compounds were discontinued.

DR A. R. BARNES, Rochester, Minn. I regret that time does not permit me to answer each of Dr. Katz's criticisms in detail. Detailed analysis of the cases reported by Gilchrist and Ritchie shows that such inconsistencies as they have called attention to can be explained on the basis of the facts that I listed in discussing the cases of acute myocardial infarction in which electrocardiographic evidence of that event was lacking. For the most part, Wilson and his co-workers corroborated our localization hypothesis. In the last issue of the British journal *Heart*, Dr. Wilson thought he had found a definite exception to this localization in a patient with a T_2 type of electrocardiogram. Subsequent careful pathologic study proved this not to be the case. Dr. Katz maintains that infarction in the anterior and in the posterior portion of the left ventricle of the dog gives an identical tracing. A review of the experimental work on the dog's heart does not support that contention. I should like to point out that it is important for all physicians to consider both the Q and T patterns in an attempt to diagnose acute myocardial infarction. There is no doubt in my mind that typical T_1 and T_2 patterns will localize myocardial infarction accurately, but the confirmation of that must be left to the future. I am confident that, in time, an agreement will be reached.

DR NATHAN S. DAVIS III, Chicago. In replying to Dr. Katz's question I would say that in some of these cases there was hemorrhagic infarction and no pain. In the series there were several cases in which no narrowing of more than one branch of the coronary artery is reported. There may be some sclerosis in other branches, but no narrowing was reported in the record. I might also state that in classifying these cases I considered those with pain and those without pain. Some patients had pain only in the arm and shoulder, others only epigastric pain. A history of that sort of pain was considered positive in making this classification.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

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- Physiology of Cerebral Activity in Children as a New Subject of Pediatric Investigation N I Krasnogorski Leningrad U S S R—p 473
Acid Base Balance of New Born Infants IV Effect of Ingestion of Alkali on Acid Base Balance of New Born Infants V W Lippard and Eleanor Marples New York—p 495
Encephalitis as a Complication of Measles Report of Thirteen Cases M G Peterman and M J Fox Milwaukee—p 512
Acute Pyothorax Treatment of Children and Infants by Aspiration of Pus and Air Replacement Preliminary Report H Bloch and P L Parrish Brooklyn—p 518
Guanidine Intoxication Complicating Factor in Certain Clinical Conditions in Children A S Minot and Katharine Dodd Nashville Tenn—p 522

Encephalitis and Measles—Peterman and Fox studied thirteen cases of encephalitis complicating measles. The cases conform to the typical picture as reported in that in twelve the onset occurred between two and six days after the onset of the rash and in one in eight days. In all but one the encephalitis began with stupor or drowsiness, and in this case the onset was characterized by restlessness and convulsions. Eleven patients (two were not so examined) exhibited a polymorphonuclear leukocytosis ranging from 12,600 to 26,000 leukocytes per cubic millimeter even up to fifteen days after the onset. The percentage of polymorphonuclears ranged from 74 to 84. All fluids were clear and seven were under increased pressure. The cell count ranged from 5 to 380, of which from 40 to 98 per cent were lymphocytes. The globulin was positive in six of the eleven fluids so tested. The sugar ranged from 71 to 125 mg per hundred cubic centimeters in the eight fluids so tested. The colloidal gold test was made on six fluids, in three it was negative and in three positive. The authors propose three theories in the explanation of encephalitis complicating measles: (1) It is the result of a virus independent of measles, (2) it is an allergic or anaphylactic phenomenon or (3) it is a virus activated by the measles organism. On the basis of the remarkable consistency in the clinical picture and observations in most established cases of encephalitis complicating measles, viz, time of onset in relation to the rash, the fever, the drowsiness or convulsions, the polymorphonuclear leukocytosis, the pleocytosis and the increased sugar in the spinal fluid and the pathologic changes the authors are inclined to believe that the condition is a clinical entity produced by some specific virus or organism.

Acute Pyothorax—Bloch and Parrish treated by aspiration and air replacement fourteen infants and children having acute pyothorax following pneumonia. The apparatus consists of a 30 cc Luer syringe and a large needle. Fairly certain location of the empyema should be made clinically and roentgenologically. The left thumb is pressed against the lower border of the upper rib thus protecting the intercostal artery, vein and nerve. The needle is inserted through the intercostal space directly beneath the thumb. By the aspiration of pus it is definitely ascertained that the needle is in the empyemic cavity. A syringe of pus is then removed and an equal amount of air is injected with the same syringe. This is repeated until on aspiration no pus enters the barrel. The injection of an additional 10 or 15 cc of air will facilitate the aspiration of any remaining pus. Tappings are repeated every four to seven days.

Guanidine Intoxication—The procedure that Minot and Dodd used for the determination of guanidine is described.

the earlier method described by Major and Weber with a few minor changes. The estimation was carried out on protein-free filtrates prepared from blood by the method of Folin and Wu. This filtrate contains the interfering salts and nonprotein extractives of blood and the guanidine in far too great dilution for colorimetric estimation. Before the color test is made, most of the salts are removed, creatine is converted to creatinine and the guanidine concentrated in a small volume of solution. In the authors' experience the highest concentrations of guanidine occurred in patients presenting rapid loss of fluid in diarrhea or having extensive necrosis in burns or acute injury of the liver or in certain types of overwhelming infection. Apparently hyperguanidinemia is a result of secondary factors rather than an essential feature of any particular disease. The intoxications seen clinically are in many respects similar to intoxication produced by experimental guanidine poisoning and are relieved by calcium therapy. The authors believe that calcium medication is a valuable supplement to the common therapeutic measures employed in the management of such toxemias.

American Journal of Medical Sciences, Philadelphia

186 315 460 (Sept.) 1933

- Acetyl β Methylcholin I Action on Normal Persons with Note on Action of the Ethyl Ether of β Methylcholin I Starr Jr K A Elson and J A Reisinger with introduction by A N Richards Philadelphia—p 313
Id II Action on Gastro Intestinal Tract of Normal Persons in Abdominal Distention and in Certain Other Conditions W O Abbott Philadelphia—p 323
Id III Its Action on Paroxysmal Tachycardia and Peripheral Vascular Disease with Discussion of Its Action in Other Conditions I Starr Jr, Philadelphia—p 330
*Diagnostic Test for Infectious Mononucleosis W W Bunnell New Haven Conn—p 346
Instance of Lymphatic Leukemia Following Benzol Poisoning E H Falconer San Francisco—p 353
Advantages of Intramuscular Injections of a Solution of Liver Extract in Treatment of Pernicious Anemia W P Murphy Boston—p 361
Congenital Aorticoventricular Fistula with Engrafted Acute Suppurative Endocarditis M Jacob and A Heinrich Brooklyn—p 364
*Serial Nonprotein Nitrogen Studies and Their Prognostic Significance in Acute Coronary Occlusion Preliminary Report C L Steinberg Rochester N Y—p 372
Serum Calcium in Normal Boys M Molitch S Weinstein and R F Cousins Jamesburg N J—p 378
Calcium Precipitations and Alkalization in Aerobic Tissue Cultures W C Hueper and Mary A Russell Philadelphia—p 383
*Typhoid Vaccine in the Treatment of Chorea A Capper and E L Bauer Philadelphia—p 390
Spontaneous Rupture of the Esophagus Report of Four Cases R Gott Jr Louisville Ky—p 400
Amebiasis in Northern New Jersey M Asher and M Kremer Newark N J—p 409
Archimism Report of a Series of Twenty Nine Cases of Poisoning from the Bite of Latrodectus Mactan G Walsh and W C Morgan Fairfield Ala—p 413
Diagnostic Methods and Metabolic Studies in Disease of Biliary Tract I Description of Routine Examination and Discussion of Normal Standards J R Travis and J A Hillman New York—p 418
Galactose Tolerance as a Measure of Liver Function J H Roe and A S Schwartzman Washington D C—p 425

Diagnostic Test for Infectious Mononucleosis—Bunnell employed the sheep cell agglutinin test in more than 2,000 cases representing seventy six clinical conditions. With the exception of serum disease, he has been unable to demonstrate an appreciable increase of heterophil agglutinins for sheep cells in the serums above the normal dilution of 1:8. In fifteen cases of infectious mononucleosis he observed a consistent increase in all cases. The titers ranging from 1:64 to 1:4,096, apparently depended to a considerable extent on the stage of the disease at which the serum was obtained and on the severity of the illness. None of the common conditions manifesting a similar clinical picture such as acute adenitis, tuberculous or syphilitic adenitis, Hodgkins disease, acute or chronic lymphatic or myelogenous leukemia, aplastic anemia, hemorrhagic purpura, agranulocytic angina or Vincent's angina have shown an increase in heterophil agglutinin titer. Cases presenting a suggestive clinical and blood picture whose blood serum shows an agglutination for sheep cells in a dilution of at least 1:64 can apparently safely be diagnosed as infectious mononucleosis and a favorable prognosis given.

Nonprotein Nitrogen and Acute Coronary Occlusion—Steinberg emphasizes the function of the kidney in coronary occlusion. A certain procedure is needed in the arterial system

for the kidney to carry on its normal function. His observations in acute coronary occlusion do not coincide with the thought that in essential hypertension the elevated blood pressure is a safety mechanism so that the vital renal function may be performed. He presents sixteen cases in two of which the drop in blood pressure and a definite and marked diminution in urinary output are not sufficient in themselves to account for the nonprotein nitrogen factor in acute coronary occlusion, for, although both had a decided and marked drop in blood pressure and a diminution in urinary output the nonprotein nitrogen did not become markedly elevated. His study of the retention of nonprotein nitrogen in the blood plasma in the sixteen cases of coronary occlusion indicates that nine showed a nonprotein nitrogen retention that was above 40 mg per hundred cubic centimeters (one had 40 mg). Of the six fatal cases, only one showed a nonprotein nitrogen below 40, and three showed progression or retention of waste products in the blood stream or continued elevation without necessarily progression in the amount of nonprotein nitrogen. Three patients in whom serial nonprotein nitrogen studies were made and who showed a definite tendency toward lowering of the nonprotein nitrogen value recovered. None of the cases examined post mortem showed evidence of any marked nephritis.

Typhoid Vaccine in Treatment of Chorea—Capper and Bauer treated twenty-three cases of chorea, nine of which were chronic, by means of typhoid-paratyphoid vaccine intravenously. nineteen were entirely symptom free at the time of discharge from the hospital. Of the nine chronic cases in which the average duration of the symptoms was four and one half years, one showed a persistent talkativeness and one a persistent blinking of the eyes, but all other symptoms had disappeared. One patient who suffered from chorea for two months was improved following the vaccine injections, but the authors were unable to continue their observations because of a transfer to another hospital soon after the injections were completed. Only one of the twenty-three cases, a subchronic one, was definitely refractory and the twitchings and irregular movements persisted in spite of the treatment. nevertheless when the patient returned three months later for follow-up examination, he was entirely well. A reexamination of eleven cases, from three to fifteen months subsequent to discharge, showed seven and possibly eight to be entirely well, in spite of the fact that over 50 per cent of them belonged to the class of chronic chorea. No untoward effects were noticed in any of the patients from the vaccine injections. The authors' method consisted in injecting intravenously a mixture of typhoid paratyphoid A and paratyphoid B vaccine each cubic centimeter containing 500,000,000 of typhoid and 250,000,000 each of paratyphoid A and B organisms. The initial dose was from 0.15 to 0.2 cc. When the patient did not react to the initial dose or to an increase of 0.1 cc daily the increase in dosage was made more rapidly. The injections were continued daily usually for six or seven days, when a rest period of several days was instituted. If the child did not recover completely after the first series of six or seven injections, a second, third or even fourth series of injections was instituted.

American J Obstetrics and Gynecology, St Louis

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Induction of Labor by Means of Artificial Rupture of Membranes Castor Oil and Quinine and Naal Pituitrin D G Morton San Francisco—p 323
*Disturbances of Menstruation Due to Simple Achlorhydric Anemia R L Haden Cleveland and J M Singleton Kansas City Kan—p 330
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Toxic Neuritis of Pregnancy S Lubin Brooklyn—p 442
*Technic of Injection of Pudendal Nerve and Branches of Small Sciatic Nerve with Observations Made on One Hundred Cases of Delivery Elizabeth O Hearn and C H Knauer Mahanoy City Pa—p 444
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Hydrops Tubae Profluens Complicating Chronically Perforating Appendicitis Report of a Case in a Girl of Twelve Years A T Walker Mare Island Calif—p 448
Dystocia Due to Carcinoma of the Rectum and of the Vagina W F Menckert Philadelphia—p 451
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Wandering Fibroid in Rectovaginal Septum J P Long Jr Memphis Tenn—p 463
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Menstrual Disturbances Due to Achlorhydric Anemia

—Haden and Singleton studied the menstrual disturbances in twenty-nine cases of simple achlorhydric anemia. Abnormalities of menstruation are found commonly in this disease and constitute one of its most characteristic features. Achlorhydria with idiopathic hypochromic anemia is pathognomonic of the disease. The disease probably belongs in the deficiency group and responds well to the administration of adequate doses of iron. Simple achlorhydric anemia should be suspected in all cases of unexplained menstrual disturbances and the suspicion verified or excluded by gastric analysis and careful blood examination. In the authors' series the menstrual disturbances occurred almost as frequently as symptoms due directly to the low hemoglobin content of the blood.

Loss of Weight in the New-Born—Kugelmass and his associates point out that the initial loss in weight in the new born can be prevented by the oral administration of a solution consisting of 6 per cent gelatin (μ 62) 3 per cent dextrose and 0.5 per cent sodium chloride at intervals of two hours throughout the twenty-four-hour cycle immediately after birth. The characteristic clinical picture of the new-born is a result of birth shock and is more effectively combated by a hydrating solution than by milk mixtures during the first two or three days of life. The total fluid intake of the new born properly conditioned to both the breast and the bottle was as much as twice that of the series receiving the routine nursery care. Preventing the loss of weight in the new born produces rapid disappearance of the so called physiologic apathy, somnolence and stupor secondary to birth shock and the compensated acidosis universally present. The new born infant shows a hypoglycemia during the first days of life and a sugar tolerance curve of low peak thus indicating a dire need for carbohydrate as well as a tendency to utilize store and exhaust their endogenous supply of carbohydrate more rapidly than older children. Determinations of the refractive index and viscosity of the serum of the new born revealed the concentration of the blood on the first days of life, gradually attaining normal values following administration of food in the control series but the new-born treated with the hydrating solution showed a markedly constant course for both refractive and viscosimetric curves. The gelatin component of the hydrating solution decreased the clotting time to less than three minutes in comparison with seven minutes in the control series.

Premedication Agent in Surgery—Axelrod studied the advantages of allyl-isopropyl-barbituric acid (alurate) in 150 surgical cases. He found the barbiturate to have definite clinical

cal advantages as previously suggested by animal experimentation. The oral administration of the substance, in tablet or capsule form, is a satisfactory method. The optimal dose appears to be 10 mg per kilogram of body weight (i.e., approximately 1 grain [0.065 Gm] for every 15 pounds of body weight excessive fat, as in obese patients, being discounted). Using a divided dosage is rational and satisfactory. Side actions occur less often than have been reported from large single doses of other barbiturates. The volume of the anesthetic can be appreciably reduced. There does not seem to be any marked delay in the occurrence of the postoperative reaction. The need for postoperative nursing care not only is not increased, as reported for some barbiturates, but is diminished in most cases.

Injection of Pudendal Nerve.—O'Hearn and Knauer used the following technic in seventy-six private and twenty-four ward patients. With the patient in the gynecologic position the inner margin of the tuberosity of the ischium is located and, at a point on a line with the anus but close to the ischium the tip of the needle is inserted in the direction of the spine of the ischium, which is palpated through the vagina or rectum. The tip of the needle when inserted about 5 cm encounters the resistance of the perineal fascia, beyond which there seems to be an open cavity. The pudendal nerve leaves the pelvis through the greater sacrosacral foramen, circles the spine of the ischium and reenters the pelvis through the lesser foramen. Therefore, by palpating the spine with the fingers of one hand and using it as a guide, it is possible to inject the solution at the proximal edge of the spine and cause complete anesthetization of the pudendal nerve and the structures which it supplies. Ten cc of a 1:500 solution of pantocain is injected into this region. The needle is withdrawn until its tip is free from the perineal fascia and then is redirected upward and outward onto the face of the tuberosity of the ischium, when the remaining 3 to 5 cc of the solution is injected. This solution is massaged upward over the surface of the tuberosity, through the potential space existing between the gluteus maximus muscle and the tendinous insertions of the extensor group of muscles, thereby anesthetizing the perineal branches of the small sciatic nerve which are constantly present in this space. A complete anesthesia to the sense of pain was manifested in all the structures composing the floor of the perineum, including the lower third of the vagina and the posterior half of the labia majora, and the perineum may be "ironed out" painlessly as well as sutured. The time of injection is not until the head is on the perineum and the membranes are ruptured and every assurance is offered that the continuance of labor will not exceed four and a half hours, which is the average duration of this anesthetic with 1 cc of 1:1,000 epinephrine added. Its effect, without epinephrine continues for two hours.

American Journal of Physiology, Baltimore

105 497-726 (Sept. 1) 1933 Partial Index

- Differences Between Anterior Pituitary Sex Stimulating Hormones and Pregnancy Urine Substances as Tested in the Male Mammal and Bird. J. A. Schockert. New York.—p. 497.
- Action of Thyroxine on Tissue Respiration. J. A. Dye. Ithaca, N. Y.—p. 518.
- The Sherrington Phenomenon. A Nervous Pathways. J. C. Hinckley and C. C. Cutting. San Francisco.—p. 545.
- Studies in Normal Human White Blood Cell Picture. I. Variations in Recumbent Basal Subjects and in Individuals with Change of Temperature. E. Jone, D. J. Stephens, Harriett Todd and J. S. Lawrence. Rochester, N. Y.—p. 547.
- Studies on Thyroglobulin. III. Thyroglobulin Content of Thyroid Gland. H. O. Byrne and Mildred Jones. Chicago.—p. 561.
- Pulmonary Artery Pressure. C. F. Hering and C. G. Warner. Baltimore.—p. 562.
- Effect of Diet on Response to Parathyroid Extract and Vitamin D. III. Effect of Low Calcium High Phosphorus Diets in Dog. Agnes Lay Morgan, F. Alta Carrion and Marguerite I. Hill. Berkeley, Calif.—p. 598.
- Variations of Intragastric Temperature in Response to Vasodilating Agent. A. W. Thies and A. M. Snell. Rochester, Minn.—p. 615.
- Sugar in Blood and Subcutaneous Tissue Following Intravenous Administration. J. W. Heim Block and B. N. Berg. New York.—p. 674.
- Further Quantitative Studies in Metabolism. Influence of Acetylcholine on Metabolism of Glucose. E. Gellhorn and D. North. Chicago.—p. 684.
- Enzymes as Stimulants for the Secretion of Renin. Elizabeth B. Smith and C. K. Cowgill. New Haven, Conn.—p. 692.

Variations of Intragastric Temperature.—Thies and Snell studied the variation of intragastric temperatures of

patients suffering from ulcers of the gastro-intestinal tract in relation to vasodilating drugs and test meals. After stimulation with histamine, the mean rise in oral temperature was 0.25 C, and the mean rise in rectal temperature was 0.19 C. The mean fall in intragastric temperature was 0.18 C initially, and then it made a rise above the initial temperature comparable to the rise noted in rectal and oral readings. After acetylcholine the intragastric temperature rose on an average 0.16 C, as compared to a rise of 0.08 C for the rectal temperatures and insignificant variations in oral temperatures, it made a sharp rise at the two hour reading. A peripheral and visceral dissociation was not so marked after the administration of acetylcholine as when histamine was used. After the administration of alcohol, the rectal and oral temperatures rose gradually. After an initial drop, the mean rise of intragastric temperature was 0.4 C, then the temperature dropped to normal. A definite splanchnoperipheral dissociation was apparent in 60 per cent of the experiments. The dissociation of visceral from peripheral reactions affecting the temperature was most apparent after the administration of histamine, less so but fairly definite after alcohol, and variable after acetylcholine. In the presence of artificially produced fever the maximal mean rise of oral temperature was 0.56 C, of the rectal temperature 0.59 C, and of the intragastric temperature 1 C. In only 20 per cent of the cases was a definite splanchnoperipheral dissociation seen, although this phenomenon may have been overlooked in the other 80 per cent. The theoretical relationship of splanchnic vasodilatation to temperature has been considered. Additional evidence has been presented to support the concept of a splanchnoperipheral balance.

American Review of Tuberculosis, New York

28 293-410 (Sept.) 1933

- *Shrunk Pulmonary Lobe with Chronic Bronchiectasis. O. R. Jones and A. Courmand. New York.—p. 29.
- Heart and Tuberculosis. Mediastinal Distortion as a Source of Circulatory Embarrassment. D. M. Brumfiel. Saranac Lake, N. Y.—p. 317.
- Experimental Bone and Joint Tuberculosis in Rabbits. P. J. Trudel. Perrysburg, N. Y.—p. 331.
- Investigation and Operative Exploration and Treatment of Old Tuberculous Cavitation with Especial Reference to Pneumonocavernosis. H. Neubof. Secaucus, N. J.—p. 344.
- Secondary Diaphragmatic Ribs Following Phrenic Neurectomy. D. O. N. Lindberg. Decatur, Ill.—p. 352.
- Tuberculous Lung in Which a Large Emphysematous Bulla Was Mistaken for a Cavity. W. S. Miller. Madison, Wis.—p. 359.
- Tuberculosis in the Hawaiian. Study of School Children of Hawaiian Blood. F. J. Halford. Honolulu, Hawaii.—p. 370.
- Tuberculosis in Infants and Infantile Races. Wathena Myers Johnson and J. A. Myers. Minneapolis.—p. 381.

Shrunk Lobe with Bronchiectasis.—Jones and Courmand present as an entity, the shrunk pulmonary lobe with chronic bronchiectasis and prove by clinical observations two probable mechanisms in the causation of pulmonary shrinkage: bronchial stenosis and chronic inflammation of the lung. In many instances a combination of these two pathologic states exists as shown by one of their cases. They believe that, besides the stenosis of a bronchus from outside pressure due to congested lymph nodes, the loss of the normal bronchial function and the inflammation of the bronchial tree by infection from the lymph nodes are definite factors in the causation of bronchiectasis. The authors are fully aware of the fact that there are many other causes of bronchial stenosis with resultant pulmonary shrinkage but they do not discuss them, as the cases they present seem to them to be attributable to bronchial stenosis and chronic inflammation of the lung. They discuss the question of the congenital origin of this condition and present two cases of chronic bronchiectasis with shrunk lobes due to possible congenital causes.

Archives of Internal Medicine, Chicago

52 341-496 (Sept.) 1933

- Ultimate Results of Thoracic Operations in Pulmonary Tuberculosis. J. J. Wiener and M. F. Heger. New York.—p. 41.
- *Iron in Human Blood. A Study. A. I. Levine and A. Apple. Omaha.—p. 361.
- Influence of Fermentation Its Relation to Lact Metabolism. C. L. Wilbur. Seattle.—p. 38.
- The Death of a Patient of Acute Bulbular Myelitis. A Case. J. F. Rogers. New Haven, Conn.—p. 100.

- Cinchophen Poisoning Report of Two Cases with Histologic Observations H H Permar and H D Goehring Pittsburgh—p 398
- Fatty Infiltration of the Myocardium O Saphir and M Corrigan Chicago—p 410
- Cardiac Weights V Levine and J G Carr Chicago—p 429
- Clinical Studies of Respiration III Influence on Expiratory Position of the Chest in Man of an Inspired Air Which Is Low in Oxygen and High in Carbon Dioxide and of Resistance to Inspiration and to Expiration J A Greene Iowa City—p 447
- Id IV Some Observations on Cheyne Stokes Respiration J A Greene Iowa City—p 454
- *Effect on Idiopathic Hypochromic Anemia of Beef Steak (Hamburger Steak) Digested with Normal Gastric Juice R T Beebe Albany N Y and M M Wintrobe Baltimore—p 464
- Cinchophen Toxicosis Results of Experimental Subacute and Chronic Cinchophen Poisoning A J Lehman and P J Hanzlik San Francisco—p 471

Iron in Blood—Sachs and his associates determined the iron content of whole blood in a large series of normal male and female subjects. They experimented on 100 medical students (men), varying in age from 20 to 25 years, and fifty nurses (women), varying in age from 20 to 30 years. They found that the average iron content of whole blood of the 100 normal men was 50.01 ± 2.56 mg per hundred cubic centimeters. The average for the fifty normal women was 42.67 ± 2.13 mg per hundred cubic centimeters. The blood of women has a definitely lower iron content than that of men. Iron in whole blood is almost entirely linked with the hemoglobin molecule. Since the quantity of nonhemoglobinous iron present in the serum and the cellular elements is very small the error in calculating hemoglobin from whole blood iron is negligible. On the basis that hemoglobin contains 0.335 per cent of iron, the authors conclude that the average normal blood of men contains 14.93 ± 0.76 Gm of hemoglobin per hundred cubic centimeters while the average normal blood of women contains 12.74 ± 0.66 Gm per hundred cubic centimeters. By dividing the number of milligrams of iron per hundred cubic centimeters of blood by the first three figures of the red blood cell count, a quotient, which Murphy, Lynch and Howard designated as the iron index is obtained. The authors found the iron index for normal men to be 10.01 ± 0.65 Gm, and for normal women 9.6 ± 0.56 Gm of hemoglobin per hundred cubic centimeters. The iron index is preferable to the color index because of the greater accuracy with which the former may be determined. The iron color index, based on the ratio of the percentage of iron to the percentage of red blood cells, is also preferable to the older hemoglobin color index. The advantages to be derived from the clinical use of this index lie in its accuracy and in the retention of the convenient +1 or -1 designation of the older hemoglobin color index.

Acidophilus Milk in Constipation—Weinstein and his associates treated thirty-six patients suffering from simple chronic constipation with acidophilus milk (1 quart daily), the cultures of which were known to be of high viability. All were ambulant. Of the patients who underwent the treatment twenty-seven reacted favorably and seven responded negatively, and in their cases the treatment was regarded as having failed. Two gave results that were neither positive nor negative. Of those who responded positively, fourteen were so called implanters, that is, they maintained a high acidophilus content in the intestine for from twelve to sixteen weeks after the discontinuance of the last course of milk treatment. During this period, no return to the former condition of constipation was noted. Two other patients showed distinct improvement sixteen weeks after the cessation of the treatment but *Bacillus acidophilus* was not demonstrable in their feces. The results indicate that the most favorable response will be obtained by the continued use of the milk over reasonably long periods with interruptions (so called rest periods) of from four to twelve weeks or even longer. Whether the administered aciduric organism actually becomes implanted in the intestine of the patient who responds positively after many weeks of feeding and intermission, or whether the constant application of the acidophilus milk under favorable conditions of diet (with milk, lactose or dextrin) stimulates to activity similar or closely related strains native in the intestine must be left an open question. Either of these two eventualities should lend strong support to the acidophilus principle.

Idiopathic Hypochromic Anemia—Beebe and Wintrobe gave five patients suffering from idiopathic hypochromic anemia beef steak with normal gastric juice, according to the method used by Castle in causing a remission in pernicious anemia. In no instance was there an increase in the percentage of reticulocytes or a rise of the hemoglobin, the volume of packed red cells or the red blood count. Following the administration in each instance of suitable amounts of iron ammonium citrate, the percentage of the reticulocytes rose promptly and there soon followed a rapid increase of hemoglobin, an increase in the volume of packed red blood cells and improvement in the patient's symptoms and general appearance.

Delaware State Medical Journal, Wilmington

5 195 222 (Sept) 1933

- Recent Advances in Treatment with Historical Notes H I Goldstein Camden N J—p 195
- Value of Diet in Treatment of Arthritis and Migraine M B Holzman Wilmington—p 212

Florida Medical Association Journal, Jacksonville

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- Review of Some Urinary Anomalies and Pathologic Conditions Producing Symptoms of Especial Interest to the General Practitioner R J Holmes and M M Coplan Miami—p 99
- Carcinoma of the Colon Plea for Recognition of Early Symptoms G M Dawson West Palm Beach—p 106
- Cesarean Section Phase in the Unwise Modern Obstetric Trend R W Holmes Chicago—p 110

Georgia Medical Association Journal, Atlanta

22 319 360 (Sept) 1933

- Diagnosis and Treatment of Aneurysm J L Campbell Atlanta—p 319
- Bismuth Poisoning in Treatment of Syphilis J W Brittingham Augusta—p 323
- Operative Technique and Postoperative Treatment of Fulminating Appendicitis J T McCall Rome—p 327
- Management of Chronic Arthritis G J Dillard Columbus—p 332
- Prevention of Deafness J A Smith Macon—p 338
- Diagnosis and Treatment of Bronchiectasis with Iodized Oil W G Elliott Cuthbert—p 340
- Rupture of Uterus During Labor R Bell Thomasville—p 342
- Oral Treatment of Syphilis in Negro Children with Acetarson (Stovarsal) J Yampolsky laboratory collaboration by D F Cathcart and J Smith Atlanta—p 344
- Use of Salvrgan in Cardiac Decompensation with Edema Case Report R W Dickson Atlanta—p 348

Illinois Medical Journal, Chicago

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- The Diagnosis of Chronic Arthritis D Boyd Highland Park—p 229
- Treatment of Arthritis by Electropexy D E Markson and S L Osborne Chicago—p 231
- Methods of Producing Hyperpyrexia by Various Physical Agents J R Merriman and S L Osborne Chicago—p 237
- *Endocrine Dyscrasias and Mental Disorders Preliminary Report J H Hutton Chicago R Brandon Springfield C F Read and J T Neasey Elgin—p 242
- Foreign Bodies in the Esophagus C U Collins Peoria—p 247
- Id C D Sneller Peoria—p 250
- Relation of the Health Officer to the Community A Ailes La Salle—p 253
- Etiology of Ocular Disease H S Gradle Chicago—p 258
- Care of the Indigent R K Packard Chicago—p 261
- Military Hygiene A P Hitchens Fort Sheridan—p 264
- Physical Measures in Hypertrophic Rhinitis A R Hollender Chicago—p 269
- Value of Combined Cholecystographic and Liver Function Studies H Swanberg Quincy—p 273
- Perineal Lacerations Method of Conducting the Second Stage of Labor Which Will Lessen Their Occurrence R F Weissbrenner Chicago—p 274
- Surgery of Thyroid in Children W L Bowen Peoria—p 277
- The Master in the House of Medicine A M Schwittalla St Louis—p 280
- What I Would Tell a Lay Audience About Venereal Diseases Carolyn Macdonald Chicago—p 285
- Some of the Obstetric Problems of the Country Doctor E E Davis Avon—p 294
- Socialization of Medicine E F Garraghan Chicago—p 298

Endocrine Dyscrasias and Mental Disorders.—Hutton and his associates attempted to determine whether there was a relationship between endocrine dyscrasias and mental disorders and whether correction of the endocrine disturbance would be valuable in the treatment of mental disorders. The pituitary products used were a commercial soluble extract from the anterior lobe of the pituitary (antuitrin) and posterior lobe extracts. They were administered hypodermically three times

a week in such doses as the patient could tolerate. The dose of posterior lobe extracts was kept below that which produced unpleasant abdominal cramps. The anterior lobe extract was given in doses of from 0.5 to 1 cc, depending on the patient's tolerance. Ovarian medication consisted of the residue or of one of the standardized preparations, more often the residue, and one ampule was given subcutaneously three times a week. If a standardized preparation was used, it was given on alternate days beginning a week before the expected menstrual period. Thyroid has been given by mouth. Of 172 patients recognized as having some endocrine defect, 267 per cent are now paroled or discharged, whereas the discharged and paroled patients from all the state institutions during the year ended June 1931 were only 17.3 per cent. This does not mean that endocrine therapy will replace the accepted psychiatric routine but that endocrine therapy should become a routine adjuvant to the psychiatric procedure when indicated.

Journal of Allergy, St. Louis

4 455 570 (Sept.) 1933

- Allergen Content of Pollen Extracts: Its Determination and Its Deaeriation. A. Stull, R. A. Cooke and Jean Tennant, New York—p. 455
- Use of Glycerolated Pollen Extracts in Treatment of Hay Fever. A. Brown, New York—p. 468
- Further Observations on Changes in Skin Tests Following Specific Pollen Therapy. A. Colmes and F. M. Rackemann, Boston—p. 473
- Status Asthmaticus or Severe Subacute Asthma. J. A. Clarke, Jr., Philadelphia—p. 481
- Allergy: A Constant Factor in Etiology of So Called Mucous Nasal Polyps. R. A. Kern and H. P. Schenck, Philadelphia—p. 485
- Further Observations on Nature of Allergy. F. M. Rackemann, F. A. Simon, Margaret G. Simon and Marga et A. Sully, Boston—p. 498
- *Hypersensitivity to Acetylsalicylic Acid Expressed by an Angina Pectoris Syndrome With and Without Urticaria. C. Shookhoff and D. L. Lieberman, Brooklyn—p. 506
- Angina Pectoris Syndrome Activated by Ragweed Sensitivity in a Patient with Coronary Vessel Sclerosis. Case Report. C. Shookhoff and D. L. Lieberman, Brooklyn—p. 513
- *Treatment and Prevention of Rhus Toxicodendron Poisoning. G. H. Gowen, Chicago—p. 519
- Common Weed Tansy (Tanacetum Vulgare) as a Cause of Eczematous Dermatitis. C. A. Greenhouse and Marion B. Sulzberger, New York—p. 523
- Contact Dermatitis Due to a Common Plant. C. H. Harville, Warsaw, N. Y.—p. 527
- Extreme Hypersensitivity to Heat. Report of Case. O. Swineford, Jr. and H. Weinberg, University, Va.—p. 530
- *Urinary Proteose in Allergic Conditions. L. Tuft and M. Brodsky, Philadelphia—p. 534
- Treatment of Bronchial Asthma by Sterile Abcess Formation. W. Lintz, Brooklyn—p. 540

Hypersensitivity to Acetylsalicylic Acid—Shookhoff and Lieberman report three cases of hypersensitivity to acetylsalicylic acid expressed by a syndrome of angina pectoris, accompanied in two cases by urticaria. None of the characteristic signs of myocardial infarction of the heart were present. A study of one case showed definite allergic manifestations and definite electrocardiographic changes in the attack produced by the ingestion of acetylsalicylic acid. The electrocardiographic changes disappeared before the subsidence of the reaction. This syndrome was produced in the patient with every administration of acetylsalicylic acid and was to some degree controlled by the administration of epinephrine. There were evidences of preexisting cardiovascular disease in all three patients.

Rhus Toxicodendron Poisoning—Gowen used the almond oil extract of Rhus toxicodendron in the treatment and prevention of eight cases of Rhus toxicodendron poisoning. The patients were from 5 to 54 years of age. One injection in the spring will protect susceptible persons for approximately one year. Injection of the almond oil extract not only is satisfactory therapeutically but also offers protection for the rest of the season and leads to milder attacks the ensuing year. Two patients were immune for one year without treatment after several annual injections. In two patients who are exposed annually immunity has been present for two years in one and five years in the other. The site of injection was the deltoid in adults and older children and the gluteal muscle in the young children. The skin was sterilized with tincture of iodine or ethyl alcohol before the injection was made. Deep into the muscle and a large drop of cellulose was placed

round the site of injection before the needle was withdrawn. This prevented any egress of Rhus toxin and eliminated the possibility of any local dermatitis of the skin round this area. In no case was less than 1 cc (one injection) of extract used. More than two injections were never needed. Noticeable improvement varied from one to three days after injection.

Urinary Proteose—Tuft and Brodsky demonstrated the presence of an ether extractable substance, described as "urinary proteose" by Oriel, in the sixty-one examinations of the urine of forty-two allergic patients in slightly larger amounts than in the nonallergic controls, and although larger amounts were eliminated than in the quiescent periods, positive skin reactions of a specific character could not be elicited nor was treatment in three cases of chronic asthma followed by any improvement. It is doubtful from these observations and a review of the literature whether the proteose of Oriel has a specific immunologic basis.

Journal of Lab and Clinical Medicine, St. Louis

15 1203 1318 (Sept.) 1933

- Insulin Resistance and Sensitivity. W. G. Karr, C. W. Scull and O. H. Petty, Philadelphia—p. 1203
- *Glucose Tolerance Curves in Pulmonary Tuberculosis. Observations on One Hundred Cases. D. W. Kramer with technical assistance of Freda Wald, Philadelphia—p. 1212
- Cholelithiasis: Statistical Study with Especial Reference to Its Frequency in the Colored Race. R. H. Jaffe, Chicago—p. 1220
- Study of Total and Ultrafiltrable Calcium and Acid Soluble Phosphate Content of Blood Serum of Four Hundred and Twenty-Two Healthy Children. Marion Smoot Needels and C. M. Marberg, Chicago—p. 1227
- Study of Dimethylaminobenzaldehyde Test for Atropine. Arlie A. O'Kelly and C. F. Poe, Boulder, Colo.—p. 1235
- Significance of Membranes in Mucous Form of Colitis. J. Friedenwald and S. Morris, Baltimore—p. 1242
- Some Factors Responsible for So Called Self Disinfecting Power of the Skin. C. S. Bryan and W. L. Mallmann, Lansing, Mich.—p. 1249
- *Possibility of Pressor Principle in Blood of Persons with Hypertension. Experimental Study. A. H. Elliot and F. R. Nuzum, Santa Barbara, Calif.—p. 1255
- Monozytic Leukemia. W. M. Fowler, Iowa City—p. 1260
- Simple One Stage Technique for Hepatectomy in the Dog. Some Remarks on Clinical Symptomatology of Terminal Hepatic Insufficiency. J. Markowitz, W. M. Yater and W. H. Burrows, Washington, D. C.—p. 1271
- *Determination of Nonprotein Nitrogen with Especial Reference to Koch-Meekins Method. C. A. Daly, Albany, N. Y.—p. 1279
- Microkjeldahl Still. T. P. Nash, Jr., Memphis, Tenn.—p. 1285
- Study of Kolmer Kahn and Kline Tests with Spinal Fluids. Lucy S. Heathman and Margaret Hugginbotham, Minneapolis—p. 1287

Pulmonary Tuberculosis—Kramer studied the curves of the blood sugar of 100 tuberculous patients divided in two series, series A including patients who at one time or other had glucosuria and series B being the control group. The fasting blood sugars were invariably of normal range. Diabetic patients were not included. The author offers suggestions for classifying the curves of the blood sugar: type I, the high or diabetic curve; type II, the normal curve; and type III, the low curve. There were seventeen patients showing a high or diabetic curve. Twelve of this number were found in series A. Eighty-three patients had nondiabetic curves, fifty-nine were normal and twenty-four showed low curves. The 17 per cent diabetic curves were much below the figures mentioned by some authors. The influence of the state of the tuberculosis on the curve of the blood sugar is indefinite. Although in occasional case of increased tolerance for carbohydrates may be observed in the late stages of tuberculosis, the author was unable to point out any direct bearing on the curves in the patients studied. He believes that the low proportion of diabetic curves and the comparatively high percentage of low curves may be interpreted as an indication that tuberculous patients have a higher tolerance for sugar and may explain the rarity of diabetes developing in tuberculosis.

The Pressor Principle, the Blood and Hypertension—With a mercury manometer Elliot and Nuzum registered the carotid blood pressure of a full grown rabbit under anesthesia with sodium amital (0.08 Gm. per kilogram of body weight in the vein of the ear). The blood to be tested was drawn with a large needle from the subcutaneous vein and the syringe emptied into a glass containing enough sodium citrate to make a total concentration of 0.4 per cent. The blood was brought immediately to the laboratory and injected into the external jugular vein of the rabbit. The hypotensive time from the

drawal of the blood to its injection was about five minutes. The amount of blood injected was 3 cc per kilogram of body weight. The lethal dose of the blood from persons both with normal blood pressure and with hypertension was approximately the same (from 6 to 8 cc per kilogram). The patients from whom the blood was obtained were carefully studied as to renal function, degree of arterial disease and height and lability of the blood pressure. With the exception of one patient who had malignant hypertension and renal failure and one who had a coronary thrombosis resulting in a lasting fall of the blood pressure, they belonged to the essential hypertensive group with constantly elevated quite stable blood pressures. Blood from laboratory workers and medical students having normal blood pressures was used for the control determinations. In most instances the result was a transitory rise of pressure followed by a prolonged fall. The average initial rise of pressure of the animals receiving blood from patients having hypertension was slightly greater and generally more prolonged than that observed in the control series. Alcohol, water and ether-soluble fractions of such blood gave uniformly a transitory fall in blood pressure. The hypothesis of a pressor principle in the blood stream of persons having consistently elevated blood pressures should be subjected to further experimental study for confirmation or refutation.

Determination of Nonprotein Nitrogen.—Daly describes a modified Koch method for the determination of nonprotein nitrogen, in which to 5 cc of blood filtrate in a tube graduated at 35 and 50 cc, 1 cc of the sulphuric acid-dioxide digestion mixture 2 (prepared by adding 3 cc of a 30 per cent solution of hydrogen dioxide to 47 cc of the stock solution of sulphuric acid [stock solution of sulphuric acid is prepared by adding 225 cc of concentrated sulphuric acid to 245 cc of distilled water in a liter flask]) and two glass beads or a quartz pebble is added. This is heated with the full flame of the micro burner until the dense white fumes of sulphur trioxide appear, the mouth of the tube is closed with a small funnel and the flame is regulated until the digestion mixture barely boils. The material should be completely oxidized and the digestion mixture will be colorless. If there is a definite brown color due to unoxidized material the digestion mixture is too weak and more dioxide should be added. The gentle heating should be continued for about two minutes and then the tube should be removed from the flame. There are usually significant amounts of dioxide present at the end of the digestion but they do not interfere when the solution is nesslerized. When occasional determinations are made it is more convenient to use digestion mixture 1 (prepared by adding 6 cc of water to 94 cc of the stock solution of sulphuric acid) and adding the oxidizing agent separately. When the digested material is cold, 1 cc of a 1 per cent solution of gum ghatti is added and diluted to 35 cc. In another tube 1 cc of digestion mixture 1 without dioxide, 3 cc of the standard nitrogen solution and 1 cc of solution of gum ghatti is added and diluted to 35 cc. Nessler's solution with sodium citrate, 15 cc is measured into a small cylinder and with the 35 cc solutions of nitrogen it is poured simultaneously into a 400 cc beaker whirled and poured back into the graduated combustion tube. The solutions should be at room temperature when nesslerized. After the air bubbles have disappeared the nesslerized solutions should be crystal clear. The standard and unknown solutions are nesslerized as near together as possible and read at once in the colorimeter. Calculation of the results is made in the regular way.

Maine Medical Journal, Portland

24 161 182 (Sept.) 1933

The Challenge of Cancer C C Little Bar Harbor —p. 165
Preputial Cancer F E Clow Wolfeboro N H —p. 169

Medical Annals of District of Columbia, Washington

2 197 218 (Sept.) 1933

Early Diagnosis of Cancer of Rectum and Rectosigmoid J Horgan Washington —p. 197
Recurrent Malignant Obstruction of Prostate Unrelieved by Prostatectomy Treated by Transurethral Resection Report of Five Cases W C Stirling and G A Hopkins Washington —p. 200
Results of Treatment of Gonorrheal Ophthalmia E J Cummings Washington —p. 203
Apparently in Good Health Prior to the Accident K Garve Los Angeles —p. 205

Missouri State Medical Assn Journal, St. Louis

30 351 388 (Sept.) 1933

Role of Hepatic Insufficiency in Surgical Problems W H Cole, St. Louis —p. 351
Management of Hepatic Disease C A Elliott Chicago —p. 356
Relationship of the Liver to Other Visceral Organs in Disease F C Helwig Kansas City —p. 359
Cirrhosis of the Liver G H Hoxie Kansas City —p. 363
Jaundice D R Black Kansas City —p. 366
*Acute Abdominal Symptoms in Heart Disease A M Ginsberg Kansas City —p. 370
Narcolepsy E T Gibson Kansas City —p. 373
The Increasing Significance of Allergy in General Practice C J Reis St. Louis —p. 376

Abdominal Symptoms in Heart Disease.—Ginsberg states that chronic abdominal symptoms are produced by valvular disease with decompensation and disease of the coronary artery with or without decompensation. Acute abdominal symptoms are produced by (1) disease of the coronary artery (angina pectoris and coronary thrombosis), (2) valvular disease (subacute bacterial endocarditis with or without emboli, mitral stenosis and congestive heart failure, right ventricle), (3) pericardial disease (acute pericarditis with or without effusion) and (4) arrhythmias (auricular fibrillation with or without emboli, auricular flutter paroxysmal tachycardia and bundle-branch block).

New York State Journal of Medicine, New York

33 1025 1082 (Sept.) 1933

Medical Aspect of Diseases of Bones and Joints T Howard Brooklyn —p. 1025
Diagnosis of Diseases of Bones and Joints Few Remarks Concerning the Diagnosis of Fractures F S Child Port Jefferson —p. 1027
First Aid in the Treatment of Fractures O C Hudson Hempstead —p. 1029
Common Diseases of Bones and Joints in Children W C A Steffen Flushing —p. 1031
Diseases of Bones and Joints Procedures in Physical Therapy J Weiss Brooklyn —p. 1034
Treatment of Chronic Multiple Arthritis G E Anderson Brooklyn —p. 1036
Polycythemia Vera Report of Ten Cases Treated with Phenylhydrazine K R McAlpin and Katharine S Edsall New York —p. 1039
Psychopathic Personality J L McCartney Elmira —p. 1045
Physical Therapy in Dermatology P E Bechet New York —p. 1049

Ohio State Medical Journal, Columbus

29 529 600 (Sept.) 1933

Little's Hernia A Meckel's Diverticulum in a Hernia Sac with Report of a Case S C Lind Cleveland —p. 549
Gas Gangrene Septicemia as Complication of Pregnancy C W Pavey and H L Reinhart Columbus —p. 551
Intravenous Liver Extract Therapy in Pernicious Anemia W Payne and H H Brittingham Cleveland —p. 553
*Oral Bismuth in Treatment of Syphilis R O Brigham Toledo —p. 556

Oral Bismuth in Treatment of Syphilis.—Brigham treated a number of patients suffering from syphilis with glycerite of bismuth administered orally. There has been marked improvement both clinically and serologically. The dosage is often run up to 20 minims (13 cc) three times a day. In weak and poorly nourished patients this dosage shows slightly toxic results manifested first in a soreness of the gums similar to that due to mercury. When the dosage is reduced, these symptoms quickly disappear. Glycerite of bismuth has long been used as a tonic, and patients usually remark that they feel much better after taking the bismuth preparation. In no case in which it has been used has the preparation failed to produce good clinical results and only in a few cases did it fail to produce excellent serologic results. The medication of this form of bismuth was frequently continued for a period of three months with a brief rest and then another period of three months to clear up old cases. The oral administration of bismuth has proved a palatable way of giving the drug and is well tolerated by the patients and many of them prefer it to hypodermic medication. The advantage over the hypodermic medication is that the patient is getting a continuous daily supply of bismuth and not in large doses at frequent intervals.

West Virginia Medical Journal, Charleston

29 365 400 (Sept.) 1933

Infant Mortality Sensitive Index of Social Welfare G M Lyon Huntington —p. 365
Medical Service D A MacGregor Wheeling —p. 373
Acute Surgical Abdomen M A Slocum Pittsburgh —p. 376
Back Injuries H E Mock Chicago —p. 383

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

8 69 84 (Sept.) 1933

- Ultrashort Electric Waves. New Development in Diathermy. E. Schliephake—p. 69
Present Status of Physical Therapy in the United States. R. Kovacs—p. 72
Absorption of Infra Red Radiation by Human Body. B. D. H. Watters—p. 74
The Field of the Light Department in a General Hospital. A. E. Rayner—p. 76
Practical Dietetics. J. N. Leitch—p. 77

British Journal of Urology, London

5 213 322 (Sept.) 1933

- *Pharmacologic Basis of Drug Treatment of Spasm of Ureter or Bladder and of Ureteral Stone. K. Samaan—p. 213
Studies of Urinary Acidifiers and Antiseptics in Relation to Pyelitis and Cystitis. D. R. Mitchell and J. M. Scott—p. 225
Carcinoma of the Penis in Siam. T. P. Noble—p. 242
Spread of Infection from the Uterine Cervix to the Urinary Tract and Ascend of Infection from Lower Urinary Tract to Kidneys. H. P. Winsbury White—p. 249

Drug Treatment of Spasm of Ureter—Samaan carried out a series of experiments to determine the degree of action of definite dilutions of papaverine, visammin or atropine on the intestine and the virgin uterus of the rabbit, the ureter of the bull, the human ureter and the bladder of the dog. He found that atropine relaxes the intestine and the virgin uterus of the rabbit, the ureter of the bull and of man and the bladder of the dog if already put in a state of spasm through parasympathetic stimulation, whereas it fails to relax these organs if the cause of the spasm is directly muscular. For the bladder or for the uterus, visammin and papaverine are practically of equal values in relaxing these organs. Relaxation results if the spasm is mediated through the nerve, the muscle or both. Papaverine and visammin relax placental muscle tissue by direct action. In the same concentrations papaverine is a more efficient drug than visammin on the intestine, while the contrary is true for the ureter of the bull and of man. This makes visammin a drug superior to papaverine in the treatment of spasm of the ureter and of ureteral stone. Relaxation results if the spasm is mediated through the nerve, the muscle or both. The superiority of visammin over papaverine or atropine in relaxing the human ureter as established by pharmacologic experiments led to its clinical trial in cases of ureteral stone. Stones were passed through the natural passages after treatment with a warmed mixture containing 5 cc of tincture of ammi visnaga (1:10 solution of 90 per cent alcohol) and 30 cc of decoction of ammi visnaga (1:40) taken three or four times daily with an occasional intermission of the drug.

Urinary Acidifiers and Antiseptics in Pyelitis and Cystitis—Mitchell and Scott present a clinical study of seventy-five cases of pyelitis and cystitis in which urinary antiseptics and acidifiers were used. They observed that ammonium phosphate and benzoate are effective urinary acidifiers but a change of pH has no influence on the infection. Hexylresorcinol, pyridium and helmutol have given no evidence of a urinary antiseptic value. Methenamine in well acidified urine cures at least one third of the nonsurgical cases of pyelitis and cystitis. Methenamine is liberated at the kidney pelvis at least and is as effective for pyelitis as it is for cystitis. Resistance to formaldehyde may be due to an individual characteristic of the organism. Focal infection (colonic absorption) seems to have a place in the etiology and treatment of persisting infections of the urinary tract. Urinary infection in simple pyelitis or pregnancy persists and disappears only post partum.

Journal of State Medicine, London

11 50 558 (Sep.) 1933

- Infant Welfare Under Existing Conditions. T. Ower—p. 57
Economic Test of the Effect of Health. I. Samaan—p. 59
Air, Water and Place. S. A. C. Their Data. G. T. Walker—p. 59
Record of Vapour Pressure. F. J. W. White—p. 65
Vapour and Place. S. A. C. Their Data. G. T. Walker—p. 65
The Effect of Temperature on the Rate of Growth of Cancer. F. C. Loke—p. 65
The Effect of Temperature on the Rate of Growth of Cancer. F. C. Loke—p. 65
The Effect of Temperature on the Rate of Growth of Cancer. F. C. Loke—p. 65

Lancet, London

2 521 572 (Sept. 2) 1933

- Experimental Pathologic Studies on Nature and Role of Bacterial Allergy. A. R. Rich—p. 521
*Generalized Osteitis Fibrosa. Case Successfully Treated by Removal of Parathyroid Tumors. A. L. Abel, G. Thomson and L. M. Hawksley—p. 525
Adenoma of Parathyroid Associated with Generalized Osteitis Fibrosa. S. C. Dyke, R. M. Walker and E. Freeman—p. 530
Clinical Comparison of Beta and Gamma Ray Therapy for Rodent Ulcer. W. J. O'Donovan and R. T. Braun—p. 532
Rectal Incontinence. Causes and Treatment. J. P. Lockhart Mummery—p. 535
Human Trematode Parasite Heterophyes heterophyes in Egypt. Life History. M. K. Bey—p. 537

Osteitis Fibrosa and Parathyroid Tumors—Abel and his associates report a case of osteitis fibrosa, which was successfully treated by the removal of parathyroid tumors, in a woman aged 58. She had had several attacks of quinsy, acute appendicitis and Bacillus coli pyelitis two years before. Her health was good until the urgent operation for acute appendicitis was performed. After the operation she never felt that she could walk properly. Her strength did not seem to improve, and twelve months before she noticed that instead of becoming stronger she was actually much weaker. She had weakness of all her limbs, but more especially of the right arm. Pain was felt over the middle of the left leg and appeared to be in the bone itself. She always felt tired and faint. The pain in the leg increased, and a swelling appeared over the anterior aspect of the left tibia and increased in size up to 2 inches in vertical diameter. More indefinite aching pains were noticed in the other extremities. Roentgenography showed a cystic area in the left tibia at the junction of the upper and middle thirds and at the inner part of the upper end, involving both the shaft and the epiphysis. The knee joints showed calcification on the surfaces of the cartilages. Microscopic examination showed the changes typical of osteitis fibrosa. Further roentgenographic examination revealed parathyroid tumor. After a rest of ten days and a high calcium diet the patient was operated on under nitrous oxide-oxygen anesthesia. A Kocher low collar incision was made and the left side was explored first. A superior parathyroid, about three times the normal size, was found and removed. On the right side, four small rounded bodies were found behind the lower part of the thyroid bed. Two were removed for microscopic observation. They were found to be lymph nodes. The thyroid was replaced in its bed, the pretracheal muscles were sutured and the wound was closed, after drainage was provided for. Seventy-two hours after operation the serum calcium had fallen to 125 mg per hundred cubic centimeters. On the sixth day two attacks of paroxysmal tachycardia occurred. Digitalis was administered, with hypodermic injections of morphine. The pulse remained rapid for some days but gradually became normal. A fortnight after operation the serum calcium was still 125 mg. Convalescence from then on was quite uneventful. A high calcium diet was administered as soon as possible after operation with viosterol and ultraviolet radiation. Ten weeks after operation the pains of the bones had disappeared. The patient was steadily gaining weight and was able to walk a little.

Medical Journal of Australia, Sydney

2 235 264 (Aug. 19) 1933

- Further Observation on Chronic Nephritis and Lead Poisoning in Queensland with Comments on Federal Official Inquiry. I. J. J. Nye—p. 235
Treatment of Uterine Cancer. E. T. Thring—p. 249
Treatment by Padon of Glandular Extension from Malignant Cervix. I. S. Kidd—p. 253

2 265 298 (Aug. 26) 1933

- Comparison of Blood Sedimentation Rate and Vernes Flocculation Test in Pulmonary Tuberculosis. H. M. James—p. 265
Dietary Selection. S. H. Scragg—p. 271
Swift. Link. Diet. Recent Work on Pathology and Treatment. S. F. McDermott—p. 279
Investigation into Incidence of Cancer in Great Britain. Sir L. Hill. Amongst War Workers in New South Wales. Floris S. Hunt—p. 281

Blood Sedimentation Rate and Vernes Flocculation Test in Tuberculosis—James confirms the work of previous authors in that both the determination of the rate of blood sedimentation and the Vernes flocculation test are of considerable value in the control of the treatment and prognosis in

cases of pulmonary tuberculosis. Provided all precautions were taken and with certain recognized exceptions, the figures for the two tests were comparable, particularly in infections that were comparatively early or but moderately advanced. In the advanced cases it was felt that the Vernes test represented the clinical condition less accurately than did the rate of blood sedimentation. Of the two methods of investigation it must be considered that the estimation of the rate of blood sedimentation is more applicable to everyday clinical work and that there is no information given by the Vernes test which cannot equally be supplied by the rate of blood sedimentation. The advantages of the latter method may be summarized as follows: 1 The Vernes test, because of elaborate laboratory methods and material, is a much more expensive test than the sedimentation test. 2 Any medical practitioner can do a sedimentation test at the bedside if necessary. 3 The rate of sedimentation actually gives considerably more information than the Vernes test. In the Vernes test one has only an end figure. 4 The 1 cc. technique for the sedimentation test is a simple matter for the patient and occasions practically no discomfort. For the Vernes test it is necessary to withdraw at least 10 cc. of blood. For the Vernes test also a fast of about fifteen hours is necessary before the test is made. 5 Blood for the Vernes test must be sent to a laboratory in which there are the requisite facilities. The sedimentation test may be performed anywhere.

Swift's or Pink Disease.—McDonald gives an account of recent work on the etiology and pathology of pink disease. He describes six cases that were apparently benefited by liver treatment. He used a preparation of pig liver. It can be made up as a soup or mixed with other food. Adults generally do not consider it palatable, children with pink disease will often take it freely undiluted. The dose for an adult patient with pernicious anemia is from 5 to 10 cc. three times daily. For the child with pink disease 5 cc. twice a day is sufficient.

South African Medical Journal, Cape Town

7 561 602 (Sept. 9) 1933

Combined Anesthesia in Surgery. F. D. du Toit. 579

Japanese Journal of Experimental Medicine, Tokyo

11 253 396 (Aug. 20) 1933

*Anemia Causing Action of Various Hydrazine Derivatives. Their Influence on Oxygen in the Blood and Their Relation to Their Chemical Structure. I. Anemia Causing Action of Various Hydrazine Derivatives and Their Relation to Their Chemical Structure. S. Minami. — p. 253

Progress of Hemolysis and Some Other Phenomena Relative to Hemolysis. H. Moriyama. — p. 301

Relation Between Endocrine Gland and Estrus Cycle. Appendix to the First Report. Ovulation in Case of Transplantation of Anterior Lobe of Pituitary Body in the Very Young Female White Rat. S. Tsuchimoto. — p. 349

*Effect of Bismuth on Experimental Akiyami. T. Moriguchi. — p. 351

Studies on Variation of Bacterium Dysenteriae (Shigae). S. Takata. — p. 357

Purification of Vaccinia Virus. Note. H. Imai and H. Kasai. — p. 383

Sterilizing Action of Unsaturated Monobasic Fatty Acids on Putrefactive Bacteria, Bacteria Typhosus and Vibrio Cholerae. S. Tetsumoto. — p. 387

Anemia-Causing Action of Hydrazine Derivatives.—Minami found no anemia-causing action in hydrazine sulphate. Chemicals that have the benzene nucleus such as phenylhydrazine, *p*-tolylhydrazine, α -methylhydrazine, *p*-nitrophenylhydrazine, *p*-methoxyphenylhydrazine and *p*-ethoxyphenylhydrazine hydrochloric acid have a fairly strong anemia-causing action. Chemicals having the naphthalene nucleus have also a fairly strong anemia-causing action but show generally slightly weaker action than chemicals having the benzene nucleus. Chemicals having the quinoline nucleus have a weaker anemia-causing action than those having the benzene nucleus. Among the chemicals having the benzene nucleus if phenylhydrazine hydrochloric acid is taken as the standard and one methyl radical is added to the benzene nucleus of phenylhydrazine hydrochloric acid the anemia-causing action of the chemical decreases. The action appears to decrease with the increases in the number of methyl radicals. The addition of the nitro radical to the benzene nucleus of phenylhydrazine hydrochloric acid increases the strength of the anemia-causing action. The phenylhydrazine hydrochloric acid having the methoxy radical slightly increases the anemia-causing action and that having the ethoxy radical shows nearly the same

degree of anemia-causing action as phenylhydrazine. In the case of the carboxyl radical to the benzene nucleus, the anemia-causing action disappears entirely. The β -naphthylhydrazine hydrochloric acid shows a stronger anemia-causing action than the α -naphthylhydrazine hydrochloric acid. Anaquinolin hydrazine hydrochloric acid shows a stronger anemia-causing action than orthoquinolinhydrazine hydrochloric acid.

Effect of Bismuth on Experimental Nanukayami.—Moriguchi tested the effect of bismuth on nanukayami (an endemic infectious disease resembling Weil's disease) by infecting guinea-pigs with *Spirochaeta akiyami* A, the results were satisfactory. After inoculating guinea-pigs with *Spirochaeta akiyami* A, he injected subcutaneously a 1 per cent solution of potassium and sodium bismuth tartrate every twenty-four hours, using 1 cc. per hundred grams of the body weight. The controls showed characteristic symptoms of nanukayami and had spirochetes in the liver. No animal injected immediately after inoculation developed symptoms of nanukayami. As no spirochetes were noted by dark field examination, the author made an emulsion of the liver to verify whether or not it had infective power for test animals and found that it had not. Seven animals were injected twenty-four hours after inoculation of which two were observed to live normally for more than a month. The others died but no lesion was discovered at necropsy to implicate nanukayami as the cause of death. Of three animals injected forty-eight hours after inoculation one lived more than a month and the other two showed no lesions of nanukayami at necropsy. The animals injected seventy-two hours after inoculation followed the same fate as the controls in one or two days. But the symptoms peculiar to nanukayami were much slighter and no spirochetes were discovered in the liver. The author shows that potassium and sodium bismuth tartrate has a positive effect when injected within forty-eight hours after inoculation (and even when injected seventy-two hours after inoculation) and concludes that potassium and sodium bismuth tartrate has a remarkable effect both as a preventive and as a curative.

Journal of Oriental Medicine, South Manchuria

19 13 22 (Aug.) 1933

Observations on Recent Mortality Statistics of Japanese in Manchuria. Part I. S. Kawahito. — p. 13

Id. Part II. S. Kawahito. — p. 16

Effect of Sulphur on Antitoxic Function Against Hydrocyanic Acid. C. Tsuru. — p. 18

Comparative Study of Various Solid Cultural Media and Kirchner's Fluid Medium. Isolation of Tubercle Bacilli. H. Hiroki and K. Urabe. — p. 19

Effect of Various Metal Salts on Therapeutic Action of Arsphenamines in Spirochetosis. H. Hiroki. — p. 20

Effect of Reflexes Produced by Stimulation of Second and Third Trigeminal Branches on Respiration and Blood Pressure. G. Nakamura. — p. 21

19 23 38 (Sept.) 1933

Experimental Investigations on Persistence of *Spirochaeta Recurrentis* in Brain. H. Hiroki. — p. 23

Biochemical Studies on Nitril. Part I. (Supplement No. 2) Formation of Rhodan Compound Within the Bodies of Lower Vertebrates. C. Tsuru. — p. 27

Effect of Pechka Heating on Ventilation. K. Matsuoka. — p. 29

Clinical Stand Against Assumption of Respiratory Paralysis as Cause of Death in Spinal Anesthesia with Tropacocaine. K. Shimotsuna, T. Imagawa and H. K. Su. — p. 29

*Slowly Developing Meningococcus Sepsis? and Its Treatment with Trypaflavine. K. Kashiwabara. — p. 30

Rhodan Compound Content of Serums of Various Animals. C. Tsuru. — p. 31

Pathologic Histology of Sclerosis of Lymph Node. T. Kitabatake. — p. 33

Experimental Studies of Postdiphtheritic Paralysis. Chapter IV. Histologic Studies on Central Nervous System in Case of Postdiphtheritic Paralysis. T. Maki. — p. 34

Patterns of Ridges of Skin on Toes of Chinese. S. Takeya. — p. 36

Treatment of Meningococcus Sepsis with Acriflavine Hydrochloride.—During the last few years, Kashiwabara encountered five cases which presented high remittent fever eruptions closely resembling erythema nodosum and arthralgia. He made clinical observations in each case and states that the present cases most closely corresponded in their clinical appearance with the "slowly developing meningococcus sepsis" described by Friedmann and Deicher. However, he could not demonstrate meningococci in the blood of each patient. He used injections of acriflavine hydrochloride and cured each patient.

Journal de Chirurgie, Paris

42 497 672 (Oct.) 1933

Technical Point in Resection of Cancerous Breast P Duval and H Redon—p 497

Surgery of Parathyroids H Welti and A Jung—p 501

*Immediate Treatment of Fractures of Base of Skull C Lenormant P Wertheimer and J Patel—p 529

Surgical Treatment of Severe Gastroduodenal Hemorrhages of Ulcerous Origin F Papin and P Wilmoth—p 559

Immediate Treatment of Fractures of Base of Skull

—Lenormant and his associates say that, in the first twenty-four hours, abstention from treatment is indicated on the one hand in hyperacute cases exhibiting signs of prostration, fever of 40 C (104 F) and abolition of the corneal reflex and, on the other hand, in so-called benign cases in which the symptoms recede quickly. Signs of intracranial hematoma are an indication for surgical treatment. If an extradural hemorrhage is discovered after the skull has been opened, the clots must be carefully removed and the source of the hemorrhage located if possible. If temporal trepanation discloses a dura mater that is violet and taut and the clinical signs indicate intracranial hematoma, the meninges should be incised. If neither an extradural nor a subdural hematoma is found, exploration of the opposite side of the head may disclose a counterblow lesion. In cases of deep intracranial hematoma, the results of this second examination are negative. In the cases of grave cerebral concussion the choice of treatment is governed by the succession of physiopathologic phenomena. It is of prime importance to measure the arterial and spinal fluid pressure as the symptoms of hypotension and hypertension are often similar. In primary hypotension, from 20 to 40 cc of distilled water should be injected intravenously and, if this fails, from 500 to 1,000 cc. of physiologic solution of sodium chloride. In hypertension there is the choice between lumbar puncture with manometric control and hypertonic medication. In certain grave cases, interpretation of the signs is uncertain although indispensable to rational treatment. The cause of a syndrome of intracranial hypertension may remain obscure and the Queckenstedt-Stoolkey test and measurement of the tension of the central artery of the retina may be necessary to determine whether the hypertension is free or blocked. In the latter case ventricular exploration by puncture at the inferior occipital point may disclose one of three conditions. Both ventricles may be obliterated by cerebral edema or, rarely, bilateral hematomas. Bilateral temporal trepanation is the only logical therapy under those circumstances. If one of the ventricles is dilated while the other one is obliterated, trepanation of the foramen on the affected side is indicated. If the result is negative evacuation of the dilated ventricle by puncture is indicated. In some cases ventricular puncture may disclose dilatation of both ventricles. This may be due to obliteration of the passages connecting the intracerebral system with the subarachnoid spaces or to the insufficiency of these passages. Withdrawal of ventricular fluid may suffice if the drainage passages are free, if they are not, repeated evacuations will bring no improvement and drainage of the subarachnoid spaces at the posterior cisterna magna is required. The authors discuss the treatment to be given after the first thirty-six hours in cases that did not show early improvement. Continued hypotension demands the injection of water or physiologic solution of sodium chloride. Secondary hypertension is much more frequent. It imposes temporal trepanation in cases in which a reassuring clinical picture in the first twenty-four or forty-eight hours is succeeded by more complete coma, epileptiform crises or paralysis, indicating a localized lesion. Temporal trepanation is not satisfactory in exacerbation of the concussion syndrome with discovery of blood in the subarachnoid spaces indicating compression or irritation of the medulla and in cases in which cerebrospinal block exists. In the latter cases if the fluid obtained by suboccipital puncture is bloody and hypertensive the block is perimedullary or cervical; if it is not the block is located higher up. In cases of hypertrophic concussion trepanation with an osteoplastic flap (Arnold) on both lateral surfaces of the foramen or perhaps posterior trepanation may be employed. In all these cases success, failure, and prognosis are uncertain.

Presse Médicale, Paris

41 1681 1704 (Nov. 1) 1933

Migratory Projectiles R Piedelievre and P Etienne Martin—p 1681
*Combination of Vaccine Therapy and Serum Therapy in Preventive Treatment of Tetanus Mme C Clavel and C Clavel—p 1683
*Specificity of Weinberg Reaction in Diagnosis of Echinococcosis J Outeirino Nunez and M Calvelo Lopez—p 1684

Vaccine and Serum Therapy in Prevention of Tetanus

—The Clavels state that in rare instances patients have succumbed to tetanus or presented manifestations of attenuated tetanus despite correctly executed surgical disinfection and prophylactic serotherapy. To prevent such occurrences they recommend that antitetanus serotherapy be supplemented by vaccination with tetanus anatoxin in cases in which the patient has one or more wounds that may remain infected with tetanus bacilli for a long time. To the passive immunity, rapidly induced by the serotherapy but of brief duration, vaccination adds an active immunity which is slowly produced but of very long duration. The combined therapy gives the patient a maximal guarantee against the danger of tetanus which is not only an immediate but a long term menace in certain cases. Vaccination with anatoxin is absolutely innocuous, it may be employed simultaneously with serotherapy and confers an immunity that lasts for several years. Vaccination with anatoxin is indicated in the case of a wound the evolution of which is long and may require successive interventions. Conservative interventions require antitetanic vaccination more than amputations, as they often take longer to heal and may retain a tetanus infection despite the vigilance of the surgeon. Vaccination is also indicated in case of multiple traumas, since in the presence of a grave trauma, as for instance rupture of the spleen, smaller wounds of the face or the extremities might receive insufficient attention. In the aforementioned cases the authors give an injection of from 10 to 20 cc of antitetanus serum immediately after the accident. Then with another syringe and at a different point a subcutaneous injection of 0.5 cc of anatoxin is given, ten days later they inject 1 cc of anatoxin and two months later 2 cc of anatoxin. In case of reintervention several months or years later, from 1 to 2 cc of anatoxin is again injected, and in this case a new antiserum injection can probably be dispensed with. In time of war all soldiers should receive antitetanus vaccination and in civilian practice it should be given to all laborers whose profession exposes them to frequent injuries susceptible to tetanic infection.

The Weinberg Reaction in Diagnosis of Echinococcosis—From a series of experiments, Outeirino Nunez and Calvelo Lopez conclude that the Weinberg reaction, a complement fixation reaction for the diagnosis of echinococcosis which uses the fluid from hydatid cysts of sheep as antigen, is not specific for hydatid disease but is rather a group reaction. This conclusion is based on the following experimental results:

- 1 The antigen prepared by them from *Taenia saginata* (alcoholic extract) fixes complement in the presence of serums of patients with hydatid cysts with intensity as great as or greater than the fluid from the cysts of sheep.
- 2 The serums of patients harboring intestinal tremas, of animals infested with various forms of tremas or their embryos and of animals immunized by parenteral administration of proteins derived from these parasites give equally positive reactions with the extract of tremas and with the hydatid antigen.
- 3 Positive results were also obtained with both antigens in certain non-parasitic diseases.
- 4 In general, inactivation is followed by the destruction of amboceptors in varying degrees; the reactions being weaker with the heated serums than with those used without inactivation.

Schweizerische medizinische Wochenschrift, Basel

67 1121 1144 (Nov. 4) 1933

Apoplectic Cases Observed from 1929 to 1932 at Heilbad Frauenfeld W Jiler—p 1121

The Influence of Chemical Oxygen Particularly Acetone Caused by Ink Pencils J de Puy—p 1124

Icterus Neonatorum Gravis with Focal Consolidation of Intestine T H Fuchs—p 1129

Determination of Blood Coagulability V Hefter—p 1134

Icterus Case G Franch—p 1138

Injuries Caused by Ink Pencils—Experimental and clinical observations conducted de Puy that the noxious agent is

ink pencil injuries is the dyestuff component, which is always an aniline dye. The greater the alkalinescence of the dyes, the greater also their harmfulness. A prolonged influence of the aniline dyes results in headaches, loss of appetite, general debility and increased temperature. Early appropriate treatment prevents the general reactions. Studies of the local symptoms disclosed that the portions of the ink pencil that have entered the tissues are dissolved by the tissue fluids. The dissolved dye becomes diffused and exerts a necrotizing effect. The injuries produced by ink pencils are particularly severe when they involve a mucous membrane, especially the conjunctiva, where they produce extensive ulcerations. The author gives a summary report of thirty-three injuries produced by ink pencils. This report indicates that surgical therapy gives better results than conservative measures. The author recommends the radical excision of all tissues that have become discolored by the dye. Subsequent irrigation with tannin and wet dressings accelerate the healing process, and some authors have seen favorable effects from after-treatment with ultraviolet rays.

Icterus Neonatorum Gravis—In a review of the literature on icterus neonatorum gravis Fuchs shows that it largely concerns itself with the familial form. It is his aim, however, to differentiate distinct groups and to call particular attention to an infectious form. In four children who developed a severe icterus during the first three days of life, he discovered a septic infectious process either during life or in the course of the necropsy. In three of them the infection originated in the umbilicus. All four children had convulsions or spasm of the muscles of the extremities as signs of a cerebral involvement. The children were apathetic and did not nurse normally. Their stools showed biliary discoloration. The blood either showed no erythroblastosis or the values were still within normal limits. In three cases the urine contained dissolved bilirubin. All but one of the children died within the first two weeks of life. Since the children were the first ones in their families to develop icterus neonatorum, the cases could not be definitely diagnosed as the familial form. The first two of the children were siblings, and consequently the familial form could be thought of, since the most characteristic symptom, erythroblastosis, was absent, however the diagnosis was not made. The author considers it probable that this family may have a predisposition to severe icterus or a susceptibility to infections. In the second and third cases the same bacterial flora was found in the vagina of the mother and in the umbilical pus of the infants. The fourth infant showed nearly all the signs of the familial form of icterus neonatorum gravis. The presence of the septic infection was the only factor that militated for a differential diagnosis of infectious icterus neonatorum. In his discussion of the familial form, the author shows the significance of the differentiation between the two forms. In addition to these two types he recognizes yet a third type of icterus neonatorum gravis. To this group he assigns all cases that are neither familial nor infectious. Whether in this third form there exists a deficient capacity for independent extra-uterine existence cannot be definitely determined as yet.

Archivio Italiano di Chirurgia, Bologna

34 749 864 (Sept.) 1933

- *Pulmonary and Thoracic Actinomycosis P. Foltz and G. Canavero —p. 749
- Experiences in Numerical Enrichment and Method of Distribution of Fibers in Nerve Regeneration A. M. Dogliotti —p. 781
- *New Method of Approach to First Two Ribs in Operation of Apicolysis R. Broglio —p. 819
- Free Test in Inguinal Lymphogranulomatosis M. Cattaneo —p. 829
- Variations of Calcium Content of Blood Serum in Animals Operated on for Sympathectomy of Superior Thyroid Arteries A. Previtera —p. 846

Pulmonary and Thoracic Actinomycosis—Foltz and Canavero made a study of a patient suffering from bilateral pulmonary actinomycosis with involvement of the pleura and the thoracic wall. The authors do not recognize the existence of two separate forms of pulmonary actinomycosis, the superficial and the ulcerative. They demonstrate that it has no anatomic basis but only a pathogenic one. They distinguish between actinomycosis involving pulmonary tissue alone (superficial actinomycosis of other authors) and that of a pulmonary thoracic

variety. In the latter they distinguish between pulmonary actinomycosis spreading to the thorax and primary actinomycosis of the thorax spreading to the lung. Regarding the pulmonary origin of the pulmonary thoracic form, the authors attribute the notable presence of pseudo-adenomatous formations to proliferation of the bronchial epithelium.

Approach to Ribs in Apicolysis—Broglio describes the following operative technique. The patient assumes the position ordinarily used in intervention on the thyroid with the head extended and turned slightly away from the side operated on. The intercostal nerves are blocked with a 0.5 per cent solution of tutocain, and a 0.25 per cent solution is used for infiltration anesthesia. A rectangular incision is made, starting 5 cm. above the sternoclavicular articulation, passing over the joint and ending at the upper margin of the second costal cartilage, the horizontal limb of the incision follows the upper margin of the second rib and stops at the outer third of the clavicle. About 40 cc. of the anesthetic is used for further infiltration. The aponeurosis of the supraclavicular fossa is divided, the sternoclavicular articulation is opened and the muscular bundles of the pectoralis major are divided 1 cm. from their insertion on the sternum together with the aponeurosis. Blunt dissection separates these bundles from the rest of the pectoralis muscle and stops at the vascular pedicle. The posterior aspect of the sternoclavicular articulation is separated from the surrounding tissues and the clavicle is dislodged and freed. The upper aspect of the first and second ribs is anesthetized and the periosteum is detached, care being taken to avoid division of the pleura. The ribs are resected at their union with the costal cartilage and at a point beyond the posterior costal angle. The operation is completed by replacing the luxated extremity of the clavicle and reconstructing the planes of the thoracic wall. The clavicle is held in place by fibroperiosteal sutures made with interrupted catgut. A rubber tube is placed at the external angle of the wound to assure drainage and is removed in clean cases after forty-eight hours. The great advantage of this method is the possibility of resecting the ribs under visual control.

Medicina Ibero, Madrid

2 533 564 (Oct. 21) 1933

- Effects of Liver and Stomach Preparation on Experimental Anemia C. Elosegui and F. Llopis —p. 533
- *Intravenous Alcohol Injections in Treatment of Pneumonia E. Jaso and M. Quero Malo —p. 542
- Surgical Therapy in Tumors of Renal Pelvis S. Pascual —p. 550

Alcohol Injections in Pneumonia in Children—Jaso and Quero Malo advise the use of intravenous injections of alcohol in the treatment of pneumonia in children. The injections consist of 5 cc. of a 33 per cent solution of alcohol in physiologic solution of sodium chloride preferably given as soon as the diagnosis is made and repeated daily until the crisis of the disease is reached. It is advisable to increase the dose in children more than 6 years of age. The injections have an antithermic effect and also a regulating effect on the pulse. The temperature shows a tendency to become normal following the first injection. The treatment has no influence on the rate of respiration. It has, however, a favorable influence on the disease by maintaining the resistance of the patients so that they go through the disease in a good general condition, do not lose their appetite and do not have diarrhea as a complication. It has also a favorable influence on the evolution of the pulmonary condition, which is manifest by the early appearance of crepitant rales on the third or fourth day of the disease and by the rapid resolution of the pulmonary lesions and disappearance of the pulmonary infiltration, as proved by roentgen examination of the lungs. The duration of the pneumonia is greatly decreased, especially when the injections are given from the first day of the disease. In these cases the disease follows a benign evolution and its duration is of not more than five days. The percentage of mortality from pneumonia in children is greatly reduced by the administration of this treatment. The author has obtained satisfactory results in fifteen cases, of which twelve were lobar pneumonia and three broncho pneumonia.

Deutsche medizinische Wochenschrift, Leipzig

59 1659 1688 (Nov. 3) 1933

- Pneumoroentgenography of Knee Joint and Its Practical Results H Schum—p 1659
- Psychiatric Treatment K Schneider—p 1663
- *Relations Between Clinical Aspects of Lead Poisoning and Lead Content of Blood and Urine E Bass—p 1665
- Transmutability of Bacteria with Especial Consideration of Bacterium Typhi Flavum G Sobernheim—p 1668
- Climatotherapy During Fall and Winter F Linke—p 1669
- After Treatment in Spas H Determann—p 1670
- Thoughts at Conclusion of Treatment in Spas P Schober—p 1672
- After Treatment? R von den Velden—p 1674

Pneumoroentgenography of Knee Joint—Schum maintains that internal injuries of the knee joint cannot be detected by means of the ordinary clinical examination. In order to avoid unnecessary arthrotomies and yet be able to make a definite diagnosis, he employs pneumoroentgenography. The needle, which he employs for the introduction of air into the joint, resembles the pneumothorax needle, that is, it is closed at the end and has the opening at the side. This arrangement prevents undesirable air inflation of the tissues. The lumen of the needle should not be too narrow, so that articular exudate which may be present can be discharged through it. The discharge of such an exudate indicates that the needle is located properly in the articular cavity, and the complete elimination of this fluid is an absolute requirement for the success of the roentgenography, since otherwise the air cannot penetrate into the different spaces. The inflation of the joint is done slowly. Since complete expansion of the capsule is absolutely necessary, 60 cc of air is the least that should be introduced, but in some cases as high as 200 cc can be injected. However, excessive amounts are not advisable, because emphysema of the soft parts will cause a distortion of the roentgen picture. All roentgenograms are made stereoscopically. One exposure is made in the sagittal plane and the other vertically to it. Occasionally an oblique exposure may be helpful. Since the demonstration of changes in the ligaments, cartilages and menisci is the primary object of pneumoroentgenography, the author employs soft ray tubes and makes the exposures as short as possible. He used this method in 233 examinations on 190 patients and never observed complications. He discusses the pathologic conditions that he discovered in the course of these examinations such as joint mice, injuries of the crucial ligaments and of the menisci, ruptures of the cartilages and deformities of the capsule. He calls attention to the fact that air inflation of the knee joint can be used also for therapeutic purposes. He states that patients with chronic dropsy frequently asked for a new air filling because it gave them great relief. He found it helpful also in postoperative exudates and in exudates caused by injuries. In case of post-traumatic accumulation of blood or fluid a single injection of air may be sufficient and even inflammatory exudates, which rarely yield to puncture alone, have yielded to air filling.

Lead in Blood and Urine of Patients with Lead Poisoning—Bass points out that the diagnosis of lead poisoning may be difficult in cases in which the lead line stippled erythrocytes and porphyrinuria are absent. Until recently the methods for the quantitative determination of the lead content of blood and urine were inadequate. However, since P Schmidt and his co-workers devised an electrolytic colorimetric method the analysis of blood and urine has proved helpful in the diagnosis in the evaluation of benefit claims and in the estimation of the efficacy of therapeutic procedure. The method developed by Schmidt extracts the lead by precipitating the incinerated material with hydrogen sulphide and by electrolysis the lead is deposited at the anode in the form of lead superoxide. By immersing the latter in a solution of tetramethylammoniodiphenylmethane in glacial acetic acid a blue dye tuff is obtained and is then colorimetrically compared with a comparative solution. The margin of error never exceeds 0.02 mg. Thus the procedure has a sensitivity that permits the detection of the smallest quantities of lead. The author notes that entirely healthy persons who have never come in contact with lead have minute amounts of lead in their blood and urine the average being 0.02 mg. in 100 cc of blood or in 1000 cc of urine respectively. As the threshold values above which signs

of lead poisoning tend to appear, Schmidt and his co-workers have given a lead content of 0.06 mg. in 100 cc of blood and of 0.1 mg. in 1000 cc of urine. From observations on forty patients with lead poisoning, the author concludes that the quantitative determination of the lead content of the blood and urine is of great value in the diagnosis and estimation of lead poisoning but careful clinical observation cannot be dispensed with.

Deutsches Archiv für klinische Medizin, Berlin

175 637 700 (Oct. 25) 1933

- Diagnosis of Syphilis of Joints Z Gerskovic and M Brenner—p 637
- *Osteoporotic Obesity (Pituitary Basophilism) E Rutishauser—p 640
- Criticism of Alkaline and Acid Methods for Determination of Iodine Content of Blood H Lucker—p 681
- *Diagnosis of Disturbances in Pancreatic Ferments Diastase Content of Blood in Diseases of Biliary Passages and of Duodenum J Bruck and Rodriguez Ollerios—p 691

Osteoporotic Obesity (Pituitary Basophilism)—Rutishauser emphasizes that osteoporotic obesity must be differentiated from adiposogenital dystrophy (Frohlich's syndrome), with which it has two symptoms in common namely, obesity and hypoplasia of the genital organs. The differentiation can be based on the presence of osteoporosis and of high blood pressure and on the absence of visual impairment and of increased cerebral pressure the latter two symptoms being nearly always present in adiposogenital dystrophy. The hypophyseal changes which the author observed in osteoporotic obesity are the following: a small basophil adenoma of the anterior lobe, numerous nodule-like, basophil hypertrophies and severe malformations in the region of the posterior lobe, the latter being interpreted as an agenesis and increase in the basophil cells involving the entire anterior lobe. In one case an alcoholic cirrhosis of the liver existed. The increase in the basophil cells does not necessarily have to assume the form of an adenoma. In two cases in which a basophil adenoma of the hypophysis could not be found, the increase in basophil cells could be traced to the primary disease, in the second case to agenesis of the posterior lobe of the hypophysis, and in a third case to alcoholic cirrhosis of the liver. The author found that the suprarenals were either well developed or hypertrophic. The hypertrophy involved both the cortex and the medulla. The ovaries were atrophied. In one case it never came to the development of the graafian follicles. The thyroids were atrophic, were poorly developed or showed degeneration of the colloid or goiter. The parathyroids were lipomatous but not always equally severe in all four parathyroids. The changes in the skeleton were of an osteoporotic nature and in two cases the osteoporosis caused spontaneous fractures of the ribs.

Munchener medizinische Wochenschrift, Munich

80 1729 1764 (Nov. 3) 1933

- Recent Observations on Venous and Pulmonary Circulation M Hochrein—p 1729
- Diagnosis and Treatment of Ulcers of Stomach and of Duodenum H Schlecht—p 1734
- Hypertension and Acidity of Tissues W Scharpff—p 1739
- *Fever Therapy of Trigeminal Neuralgia T Bockheiser—p 1740
- Fight Against Gangrene W Cerlach—p 1743
- Rejection of General Use of Thorium Dioxide Preparation as Contrast Medium in Iseography O Hennig and J Lechner—p 1746
- Nervous Disturbances and Invalidism A Hanke—p 1747
- Causes of Dropsy in Eighteenth Century Contribution to History of Diagnosis of Cardiac Disturbances J Nerpach—p 1749
- Circulation and Respiration in Pulmonary Tuberculosis and Its Significance in Deciding Collapse Therapy R Cohen—p 1753

Hypertension and Acidity of Tissues—Scharpff calls attention to studies which revealed that an abnormal retention of alkali is demonstrable in disorders with a vasomotor component (gastric ulcer asthma hypertension). Investigators who studied this problem in patients suffering from hypertension found that the retention of alkali is greater in younger persons than in older ones. To verify this observation the author decided to study alkali retention in older patients having hypertension. The average age of the forty patients whom he subjected to a sodium bicarbonate tolerance test was 58 years. Following elimination of all diuretics the patients received a bolus of 10 g. of sodium bicarbonate dissolved in 100 cc of water. The blood was evacuated the blood pressure noted,

or a specimen was withdrawn with the catheter (test urine 1). Then they were given an intravenous injection of 20 cc of a 10 per cent solution of sodium bicarbonate, and two hours later the bladder was emptied once more (test urine 2). The degree of acidity of the two specimens was determined by means of the colorimetric method of Wulff. The results were not uniform. The differences in the pH values of the two specimens fluctuated between 0.3 and 2.0, and in one case the pH value was not changed at all. If the difference in the two specimens is slight, the alkali has been retained in the tissues of the patient; if it is great, the elimination is good. The author observed that the treatment effected a considerable reduction in the blood pressure of patients who eliminated the alkali well, whereas the therapy was ineffective in those who retained large portions of the alkali. Thus the test is an aid in forecasting the probable development of hypertension.

Fever Therapy of Trigeminal Neuralgia.—In the treatment of trigeminal neuralgia, Bockheler employed a preparation which contains proteins from nonpathogenic bacilli primarily of the colon group. The first injection was generally made with 50 units, the second with 100, the third with 200 and so on until 500 units is reached. The total number of injections is usually from five to six, but in some cases from three to four may be sufficient, and in refractory cases from seven to eight injections may be given. The fever begins usually from one to two hours after the injection. During the following two or three hours it increases to from 39 to 40 C (102.2 to 104 F) and after another six or eight hours it begins to decline again. In the cases of trigeminal neuralgia, but also in other forms of neuritis, it was found that the greater the pain reaction of the involved nerve during the fever the better was the therapeutic result. Complications or injurious effects were never observed. The author gives the case reports of a number of patients who were subjected to this form of fever therapy. He does not wish to create the impression that fever therapy should replace surgical therapy entirely, but he thinks that, if his results with fever therapy could be duplicated by others, it would be advisable to try fever treatment first, and to employ surgical treatment only as a last resort.

Zeitschrift für das Experimentelle Medizin, Berlin

91 1266 (Oct. 21) 1933.

- Experimental Investigations on Spastic or Peptic Genesis of Acute Hematogenic Pilocarpine Gastritis. H. Hanke—p. 1
- Experimental Investigations on Production of Necroses by Infection and Simultaneous Modification of Blood Circulation. P. Schmidt. Iceland—p. 34
- Fermentative Hemolysis. D. Kanocz—p. 50
- *Modification of Blood Pressure by Moor Baths. H. Guthmann and I. Hess—p. 66
- Role of Reticulo-Endothelial System in Fibrinogen Formation. A. Leszler and L. Pauliczky—p. 86
- Functional Capacities of Pars Intermedia of Human Hypophysis in Investigations on Content and Site of Formation of Melanophoric Hormone. A. Jores and O. Clogner—p. 91
- Absorption of Iodine from Baths Through Skin and Its Fate in Organism. H. Anthes and F. Salzmann—p. 100
- Investigations on Action Mechanism of Contra Insular Hormone of Anterior Lobe of Hypophysis. Anterior Lobe of Hypophysis, Thyroid and Carbohydrate Metabolism. H. Lucke, E. R. Heydemann and F. Duensing—p. 106
- *Carbon Dioxide Inhalation in Treatment of Bronchial Asthma. P. Farago—p. 114
- Experimental Investigations on Problem of 'Trypsin Intoxication' in Acute Pancreas Necrosis. Sensitive and Exact Method for Quantitative Determination of Trypsin. J. Baumann—p. 120
- Edema Tendency and Serum Lipoid Quotient. H. Kurten—p. 178
- Determination of Length and Position of Digestive Tract. Studies on Dead and Living Dogs for Comparison of Intravital and Postmortem Conditions. R. Nickel—p. 193
- *Studies on Uric Acid Regarding Hyperuricemia of Renal Origin. W. Voigt—p. 244
- Influence of Duration of Moistening of Solids on Their Capacity to be Moistened. H. Lampert—p. 255
- Influence of Sulphide, Sulphite and Sulphate Compounds on Metabolism. M. Kojima—p. 257

Modification of Blood Pressure by Moor Baths.—In studies on the influence of moor baths on the blood pressure, Guthmann and Hess found that under the influence of the baths the daily fluctuations in blood pressure are comparatively mild. The less hot moor baths effect a greater reduction in the systolic pressure than do the hot baths. In contradistinction

to other investigators, the authors found that after hot baths there was no increase in the systolic pressure over the initial value, either in the average values or in the greatest number of individual cases. To be sure, the number of patients who show a short increase at the beginning and end of the bath increases with the temperature of the bath, but they always remain in the minority. The diastolic pressure decreases immediately after the onset of the bath. In the hotter baths this decrease is somewhat slower. The amplitude is temporarily increased during the bath, and this increase is not merely the result of the further decrease of the diastolic pressure but particularly of the comparatively lesser decrease in the systolic pressure. Hotter baths effect a greater increase in the amplitude. In baths that are less hot the maximal increase in the amplitude takes place during the first part of the bath, while in the hotter baths the maximal amplitude is reached during the second half. The effect of water baths of the same temperature and of the same duration as moor baths is generally less prolonged. The quantitative changes likewise are often lesser. Under certain conditions, half moor baths of higher temperatures produce the same reactions as full moor baths of lower temperatures. By varying the mode of application (full and half baths) and the temperature and the duration of the baths, the reaction can be adjusted to the individual case. A complete series of moor baths does not change the blood pressure within certain limits. The primary blood pressure must be taken into consideration when the type of moor baths is decided. In case of hypotension, the patient has to be watched during the bath, because there is danger of collapse. This applies particularly to the hot baths with their greater action on blood pressure and pulse acceleration.

Carbon Dioxide in Treatment of Bronchial Asthma.—Farago shows that, in addition to the medicinal and dietary treatments, carbon dioxide inhalation has a certain place in the symptomatic treatment of bronchial asthma. He found that some asthmatic attacks and dyspneas can be favorably influenced by the inhalation of an 8 per cent mixture of carbon dioxide and oxygen. The inhalation of this mixture effects a decrease in the alkali reserve and an increase in the lactic acid content of the blood. The pH of the urine remains the same, while the ammonia elimination decreases.

Uric Acid and Hyperuricemia of Renal Origin.—Voigt recommends Folin's micromethod for the determination of uric acid. He stresses the advantages of the method, particularly its reliability. In order to illustrate renal insufficiency caused by "endogenic overburdening" with nitrogenous waste matter, especially uric acid, he describes a case in which pneumonia was complicated by nephritis. The renal insufficiency became manifest in the retention of large amounts of nitrogenous waste matters in the blood. The curve indicating the uric acid content of the blood was determined by means of pyrogenic uric acid tolerance tests in normal persons as well as in the patients having renal insufficiency. In normal persons presenting mild fever the curve rises only slightly, and after cessation of the fever the curve immediately returns to the normal level. In patients suffering from renal disturbances, however, the curve indicating the uric acid content rises comparatively high and the decline is extremely retarded. The uric acid content during rest and while the person is fasting shows a surprising individual constancy in normal persons but in persons having renal insufficiency there are great fluctuations, corresponding to the impaired eliminatory function of the kidney. The difference between the uric acid content of the blood and of the cantharides blister in patients having renal insufficiency makes possible the interpretation of a hyperuricemia and helps in determining its renal origin. In the case in which pneumonia concurred with nephritis, the disappearance of the renal insufficiency was accompanied by a steplike decrease in the difference between the uric acid content of the blood and of the cantharides blister. In latent renal insufficiency an artificial fever of short duration increases the difference between the uric acid content of the blood and of the cantharides blister to an extent that in persons without renal disturbances can be obtained only if the fever is high and prolonged.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JULY-DECEMBER, 1933

Abstracts of important articles in the following journals have been made in the Current Literature Department of THE JOURNAL during the past six months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to Fellows of the American Medical Association for a period not exceeding three days. Two journals may be borrowed at a time. No journals are available prior to 1925. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Thus most of these journals are accessible to the general practitioner.

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| Acta Chirurgica Scandinavica Stockholm | Delaware State Medical Journal Wilmington |
| Actas de la Sociedad de Cirugia de Madrid | Dermatologische Wochenschrift Leipzig |
| American Heart Journal St. Louis | Dermatologische Zeitschrift Berlin |
| American Journal of Anatomy Philadelphia | Deutsche medizinische Wochenschrift Leipzig |
| American Journal of Cancer New York | Deutsche Zeitschrift für Chirurgie Berlin |
| American Journal of Clinical Pathology Baltimore | Deutsche Zeitschrift für Nervenheilkunde Berlin |
| *American Journal of Diseases of Children A. M. A. Chicago | Deutsches Archiv für klinische Medizin Berlin |
| American Journal of Hygiene Baltimore | Diario Medico Buenos Aires |
| American Journal of the Medical Sciences Philadelphia | East African Medical Journal Nairobi |
| American Journal of Obstetrics and Gynecology St. Louis | Edinburgh Medical Journal |
| American Journal of Ophthalmology St. Louis | Endocrinology Los Angeles |
| American Journal of Orthopsychiatry Menasha Wis. | Finska Läkaresällskapets Handlingar Helsingfors |
| American Journal of Pathology Boston | Giornale Medico dell'Alto Adige Bolzano |
| American Journal of Physical Therapy Chicago | Glasgow Medical Journal |
| American Journal of Physiology Baltimore | Guy's Hospital Reports London |
| American Journal of Psychiatry Baltimore | Gynecologie Paris |
| American Journal of Public Health New York | Gynécologie et Obstétrique Paris |
| American Journal of Roentgenol. & Rad. Therapy Springfield Ill. | Heart London |
| American Journal of Surgery New York | Hospitalstidende Copenhagen |
| American Journal of Syphilis St. Louis | Hygien Stockholm |
| American Journal of Tropical Medicine Baltimore | Illinois Medical Journal Chicago |
| American Review of Tuberculosis New York | Indian Journal of Medical Research Calcutta |
| Annaes Paulistas de Medicina e Cirurgia Sao Paulo | Indian Medical Gazette Calcutta |
| Annales de Médecine Paris | Indian Medical Research Memoirs Calcutta |
| Annali Italiani di Chirurgia Naples | International Journal of Psycho Analysis London |
| Annals of Internal Medicine Ann Arbor Mich. | Irish Journal of Medical Science Dublin |
| Annals of Medical History New York | Jahrbuch für Kinderheilkunde Berlin |
| Annals of Otolaryngology and Laryngology St. Louis | Japanese Journal of Experimental Medicine Tokyo |
| Annals of Pickett-Thomson Research Laboratory London | Japanese Journal of Gastroenterology Kyoto |
| Annals of Surgery Philadelphia | Japanese Journal of Obstetrics and Gynecology Kyoto |
| Archiv für Dermatologie und Syphilis Berlin | Journal of Alabama State Medical Association Montgomery |
| Archiv für Gynäkologie Berlin | Journal of Allergy St. Louis |
| Archiv für Kinderheilkunde Stuttgart | Journal of Anatomy London |
| Archiv für klinische Chirurgie Berlin | Journal of the Arkansas Medical Society Little Rock |
| Archiv für Psychiatrie und Nervenkrankheiten Berlin | Journal of Bacteriology Baltimore |
| Archiv für Verdauungskrankheiten Berlin | Journal of Biological Chemistry Baltimore |
| *Archives of Dermatology and Syphilology A. M. A. Chicago | Journal of Bone and Joint Surgery Boston |
| Archives of Disease in Childhood London | Journal de Chirurgie Paris |
| *Archives of Internal Medicine A. M. A. Chicago | Journal of Clinical Investigation New York |
| Archives des Maladies de l'Appareil Digestif Paris | Journal of Comparative Neurology Philadelphia |
| *Archives of Neurology and Psychiatry A. M. A. Chicago | Journal of Experimental Medicine New York |
| *Archives of Ophthalmology A. M. A. Chicago | Journal of the Florida Medical Association Jacksonville |
| *Archives of Otolaryngology A. M. A. Chicago | Journal of General Physiology Baltimore |
| *Archives of Pathology A. M. A. Chicago | Journal of Hygiene London |
| Archives of Physical Therapy & Ray Radium Chicago | Journal of Immunology Baltimore |
| *Archives of Surgery A. M. A. Chicago | Journal of the Indiana State Medical Association Indianapolis |
| Archivio Italiano di Chirurgia Bologna | Journal of Industrial Hygiene Boston |
| Archivio di Patologia e Clinica Medica Bologna | Journal of Infectious Diseases Chicago |
| Archivos Espanoles de Pediatría Madrid | Journal of Iowa State Medical Society Des Moines |
| Archivos de Medicina Cirugía y Especialidades Madrid | Journal of Kansas Medical Society Topeka |
| Beiträge zur Klinik der Tuberkulose Berlin | Journal of Laboratory and Clinical Medicine St. Louis |
| Beiträge zur klinischen Chirurgie Berlin | Journal of Laryngology and Otolaryngology Edinburgh |
| Bibliotek for Læger Copenhagen | Journal of Medical Association of Georgia Atlanta |
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